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The Influence of Organisational Culture and Knowledge Environment on Organisational Success in Saudi Arabia's IT Firms

Doctor of Philosophy Area of Information Systems

By

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This thesis is dedicated to my mother and father, brothers, husband and my son.

CERTIFICATE OF ORIGINAL AUTHORSHIP

I, [Mujid Marwan O Attar] declare that this thesis, is submitted in fulfilment of the requirements for the award of [PhD in Information Systems], in the [Faculty of Engineering and Information Technology, School of Information System and Modelling] at the University of Technology Sydney. This thesis is wholly my own work unless otherwise reference or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis. This document has not been submitted for qualifications at any other academic institution. This research is supported by the Australian Government Research Training Program.

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List of Publications

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Glossary

Abbreviation	Description	Definition
χ^2	Chi-square	Statistically significant that affects the size of the correlation in the model, the larger the correlation, the poorer the fit therefore, alternative measures are developed such as *df* (degree of freedom) and *p* values.
AIC	Akaike's information criterion	A comparative measure of fit and therefore meaningful only when two different models are estimated, a lower value indicates a better fit and so the model with the lowest (AIC) is the best-fitting model.
ARP	Administrative requirement portal	The administrative requirement portal enables administrative functions, such as creating and managing portlets and other web services.
BIC	Bayesian information criterion	Increases the penalty of sample, size increases and has a high value on parsimony (perhaps too high).
C	Communication	Considered the way for employees and managers within the organisation to use communication tools in order to exchange knowledge, feedback and ideas that helps in decision-making.
C	Codification of knowledge	Refers to the codification of knowledge and documenting it for the sake of preventing knowledge loss.
C	Collection of knowledge	Refers to the collection of knowledge donated within the organisation.
CFA	Confirmatory factor analysis	A type of factor analysis that is used in social research to test whether measures of a factor or construct are consistent with a researcher's understanding of the construct's nature.

CFI	Comparative fit index	Measures directly based on the non-centrality measure, if the index is greater than one, it is set at one and if is less than zero it is set to zero.
D	Donation of knowledge	Refers to the individuals who use communication and their personal intellectual capital to donate knowledge.
E	Explicit knowledge	The explicit knowledge that is intangible knowledge which is hard to capture and document.
e	Estimated item error	This representation and definition of measurement error permits testing the hypothesis that measurement error is content for items I test, and that error is independent of a "true score".
EFA	Exploratory factor analysis	A technique in factor analysis where a statistical method is used to expose the structure reinforcement of a large set of variables.
EM	Executives and managers	Executives and managers who participated in the data collection phase.
FP	Financial performance	Refers to the organisational annual growth and profits.
GDP	Gross domestic product	The final value of the goods and services produced, within the geographic boundaries of a country during a specified period of time, normally a year. GDP growth rate is an important indicator of the economic performance of a country.
HC	Human capital	Refers to the employees' knowledge, skills, innovativeness, attitude, commitment, wisdom and experience.
HREC	Human Research Ethics Committee	The ethics department of University of Technology Sydney.
IC	Intellectual capital	The sum of all knowledge and knowing capabilities that will be crucial for firms to gain a sustainable competitive advantage.

IT	Information technology	Computers and telecommunications systems for storing, retrieving, and sending information.
KBV	Knowledge-based view	Perceives the organisational culture in terms of the organisation's reward structures for the decisions and actions of employees concerning the utilisation and sharing of knowledge.
KE	Knowledge environment	The researcher developed a knowledge environment concept, which contains the main factors of knowledge sharing and intellectual capital.
KM	Knowledge management	Knowledge management is the process of capturing, evolving, sharing and efficiently employing organisational knowledge.
KPI	Key performance indicators	A measurable value that demonstrates how effectively a company is achieving key business objectives.
KS	Knowledge - sharing	Relevant knowledge, which should always be made available and accessible at all times to all interested parties within the organisation.
KSA	Knowledge sharing approaches	Refers to both the codification of knowledge and personalisation of tools within the organsiation.
KSP	Knowledge-sharing process	Refers to both the collection and donation of knowledge within the organsiation.
KST	Knowledge-sharing type	Refers to both explicit and tacit knowledge-sharing.
NNFI	Non-normed fit index	Another type of incremental fit index.
NPS	Net promoter score	Is a management tool that can be used to gauge the loyalty of a firm's customer relationships.
OC	Organisational culture	Involves the unique norms, shared values and assumptions that define an organisation alongside the

		practices that all groups and individuals share within the organisation.
OP	Operational performance	Refers to the customer satisfaction, cost management and productivity of the company.
OPEC	Organisation of Petroleum Exporting Countries	Coordinates and unifies the petroleum policies of its member countries and ensures the stabilisation of oil markets in order to secure an efficient, economic and regular supply of petroleum to consumers, a steady income to producers and a fair return on capital for those investing in the petroleum industry.
OS	Organisational success	Organisational value creation or organisational success is important for meeting organisational goals influences performance, as performance influences organisational success
P	Personalisation of tools	The capturing of knowledge in order to personalise it according to organisational need.
RC	Relational capital	The knowledge and learning capabilities that exist in relationships between an organisation and its external stakeholders.
RMSEA	Root mean square error of approximation	This absolute measure of fit is based on the non-centrality parameter.
SC	Structural capital	The valuable strategic assets of organisational capabilities, organisational culture, routines and procedures.
SEM	Structural equation modelling	The term used to refer to two computer based statistical fit software packages: PLS-PA and LISRELA/AMOS.
SWAT	Strength, weakness,	A type of analysis most commonly used by business entities, but it is also used by non-profit organisations and, to a lesser degree, individuals for

	opportunity and threat	personal assessment. Additionally, it can be used to assess initiatives, products or projects.
T	Interpersonal trust	Refers to the level of trust gained between coworkers and the degree of their willingness to share knowledge and information between each another within the organisation.
T	Tacit knowledge	Refers to tacit knowledge that is documented in a written form within the organisation.
TLI	Tucker Lewis index	The Tucker-Lewis index (also called the non-normed fit index or NNFI), another incremental fit index, does have such a penalty. Let $\chi 2/df$ be the ratio of chi square to its degrees of freedom.
TS	Technology support	Technology support involves tools that are within the organisation which helps in knowledge sharing/transfer.
UTS	University of Technology Sydney	The university where the researcher conducted this thesis.

Abstract

One of the most significant discoveries and key factors of organisational success is "knowledge". Knowledge is a resource, not only for economic progress but also an asset for business and corporate innovative success with respect to a firm's level of competitive advantage. Knowledge is a key resource for the intellectual capital of organisations. Ultimately, knowledge and intellectual capital constitute the knowledge environment of an organisation. It is therefore vital for managers and employees to understand how knowledge processes (the flow of knowledge) and intellectual capital (the stock of knowledge) conflate to facilitate the success of their organisations. Within the study of the knowledge environment and organisational success, a potentially valuable avenue of research seeks to evaluate the position and role of organisational culture embedded in this environment.

Today, Saudi Arabia is aiming to shift from an oil-reliant economy to a knowledge-based economy, were alternative resources has been acknowledge specifically with the phenomenon of knowledge-sharing. The major key component of a knowledge-based economy is the ability of organisations to manage and alter knowledge for innovative and collaborative purposes.

The aim of this study is to explore the influence of organisational culture (OC) (which consists of interpersonal trust, communication and technology support) on the knowledge environment (KE): (which is made up of knowledge-sharing types, approach and process combined with intellectual capital) and organisational success (OS) in terms of financial and operational performance. The premise of this study is to understand knowledge-sharing environment practitioners in Saudi Arabia by identifying and evaluating different aspects of knowledge-sharing environment to effectively facilitate organisational success from the perspectives of both Saudis and non-Saudis. It is all about getting the right knowledge to the right people at the right time in order to share and contribute to organisational improvement, performance and, most significantly, organisational success. However, an effective organisational culture and knowledge environment are essential to ensure the long-term success of an organisation. Therefore, this study proposes that organisational culture shapes the organisation's knowledge environment, which, in turn, affects organisational success.

A research model is developed in this thesis to investigate the influence of organisational culture (OC) and knowledge environment (KE) on organisational success (OS) in Saudi Arabia's IT firms. The three main construct domains are: organisational culture, knowledge

environment and organisational success and they have a significant positive relationship between each other. The empirical research study was conducted to provide a better understanding of the research model's interrelationships among the main key constructs within Saudi Arabia's IT context. The key participants for this study are both managers and employees selected from various IT organisations in Saudi Arabia.

The study deployed a sequence of mixed methods that incorporated both quantitative and qualitative approaches of analysis. Phase A of the research study employed a quantitative method to develop the research model based on the collected data from a survey questionnaire targeting Saudi Arabia's IT firms from different sectors and for both Saudi and non-Saudi participants. In addition to this, the quantitative method used confirmatory factor analysis (CFA) and structural equation modelling (SEM). The CFA was developed to identify the model fit indices to be good and the unidimensionality was finally proven. SEM and its correlation analysis were employed to identify the model fit significance between each model and its variables and to determine whether the Saudi or non-Saudi samples are significant. The analysis assesses the research model by evaluating the relationships and testing the hypothesis between the three main constructs.

The result has revealed three statistically significant relationships: (OC → KE), (OC → OS), and (IC → OS) which, are shaped an essential part of the final empirical model as the relationships among the Enablers → Processes → Outcome.

Based on the results from Phase A, a qualitative research method was established in Phase B of the analysis which supports the validity of the structural and measurement of the final model. Thus, explanatory case studies were conducted of 13 different IT organisations in Saudi Arabia using semi-structured, face-to-face interviews with key personnel within the firms. The purpose of this phase was to discover whether the empirical model could be validated by sequential qualitative data collected from specific organisational settings. This phase was accomplished through a technique called pattern matching, where the patterns of relationships between the constructs depicted in the research model was compared with the ones identified in the case studies. The case studies are demonstrated as a good match between the patterns for all the relationships uncovered from the case studies and the relationship hypothesised in the empirical model. Finally, a thematic analysis for the survey questionnaire open questions was conducted to summarise the participants' answers to open-ended questions in the survey instrument in order to support the qualitative analysis results.

These findings supported the validity of the research model in terms of representing the current phenomena of this research study. From these findings, the study is able to offer a number of implications which are beneficial to Saudi Arabia's IT firms' adoption of a knowledge-based economy. Knowledge environment enablers should be implemented in order to enhance the organisational culture and improve organisational success as measured through financial and operational performance. Finally, future research directions were identified to extend the results of the current research study.

Keywords: *Organisational Culture (OC), Knowledge Environment (KE), and Organisational Success (OS).*

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Chapter 1: Introduction

Chapter 1 is an overview of this research study. Section 1.1 describes the main factors of the research background. This is followed by the statement of the research problem in Section 1.2, then Section 1.3 explains the main motivation of the research. Section 1.4 outlines the purpose of the study and Section 1.5 presents the research aim and objectives. Section 1.6 outlines the main research questions, Section 1.7 identifies the main significance of the study, Section 1.8 defines the scope of the study and Section 1.9 outlines the main research plan. Finally, Section 1.10 describes the layout of the thesis.

1.1 Research Background

In today's fast-moving economies, in which information and technology are central, knowledge is a prime factor that determines the competitive advantage of an organisation over others. Many chief executive officers (CEOs) have declared knowledge as the most crucial factor for ensuring the protracted sustainability of an organisation. An organisation's reputation and goodwill among its clients with regard to its products and services relates strongly to its knowledge and continuous innovation (Frost, 2010). Strategic knowledge management is the underlying force for superior innovation and market performance (Cabrilo & Dahms, 2018). Consequently, organisations are exploiting new and complex information flows, such as big data, to enable knowledge and improve organisational efficiency and sustainability (Hijazi, 2017; Tian, 2017). However, moving towards more knowledge spaces that are complex will require organisations to understand their knowledge environment and its role in shaping organisational success. Organisational culture is central in facilitating a shift towards better management (Hijazi, 2017; McAfee et al., 2012). Moreover, an environment that is conducive to knowledge coupled with effective knowledge-sharing systems, respect and incentives improves the productivity of employees (Kaplan et al., 2014). The focus on conducive knowledge environments and the fact that organisational culture drives the ways in which organisations do things leads us to question the relationship between organisational culture, knowledge environment and organisational success.

Organisational culture refers to the values and practices shared within an organisation (Gillespie & Reader, 2017, p.1). The indicators of organisational culture include but are not limited to trust among employees, communication and collaboration, support and control and the goals and rules of the organisation (Hartog & Verburg, 2004). Organisational success

depends on employee's commitment and performance, which is defined by the organisational culture (Anitha & Begum, 2016; Arifin, 2014). In addition to enhancing employee performance, organisational culture supports the organisation's innovation performance (Halim et al. 2014; Laforet, 2016), brand portfolio performance (Laforet, 2017) and the overall organisational commitment to success (Carlos Pinho, Paula Rodrigues & Dibb, 2014). Therefore, organisational culture consistently predicts a range of organisational performance measures and, as such, the future success or failure of an organisation is often apparent and embedded in its cultural properties (Gillespie & Reader, 2017, p.1).

Organisations adopt multiple knowledge management procedures, methods and tools to promote efficiency and enhanced productivity. Knowledge management in a business organisation involves "managing the activities of knowledge workers, achieved through facilitating, motivating, leading, and supporting knowledge workers and providing or nurturing a suitable working environment" (Gao, Li & Clarke 2008, p.3), while knowledge-sharing in particular involves "activities of transferring or disseminating knowledge from one person, group or organisation to another" (Lee, 2001b, p. 324). Reaching sufficient knowledge management, and knowledge-sharing in particular, remains a challenge because although organisations may possess multiple stocks of knowledge, finding the right set of data, information and knowledge for a task is always difficult and often leads to under-utilisation (Argote, 1999; Lee, 2001a). Knowledge-sharing is correctly denominated as the driving wheel of not only organisations' knowledge management strategy but also their approach or method as well. However, the success or failure of a knowledge-sharing strategy depends upon whether or not this strategy, approach or method is synchronised with the organisation's goals and overall strategy. It is considered to be the responsibility of senior management to disseminate those goals and strategies to all of the organisation's employees in a clear manner in order to obtain their support (Paroutis & Al Saleh, 2009).

Practitioners ought to realise that knowledge-sharing is context specific (Nonaka & Takeuchi, 1995). There is culture embedded in every context and this culture will differ across context. Organisational culture is central in all knowledge processes – i.e. knowledge creation, knowledge-sharing and knowledge application (Dalkir, 2011). As organisations strive to promote efficiency, performance and success through improving knowledge-sharing systems, they should understand their knowledge environment comprehensively and seek to establish the role of organisational culture in knowledge processes and organisational success. At this

point, it is imperative for practitioners to evaluate their organisational culture in relation to their knowledge-sharing environments. Many existing studies examine knowledge-sharing as a single factor that affects different process and outcomes. Without a deeper analysis into organisational knowledge-sharing environments, one may not sufficiently explicate the facets of the knowledge-sharing environment that most significantly facilitate efficiency, performance and success. This study operationalises an organisation's knowledge-sharing environment by explicating the flows and stocks of knowledge. In this research, I examine these flows by identifying the types of knowledge, knowledge-sharing approaches and knowledge-sharing processes. In addition to this, the stocks of knowledge are examined by investigating the intellectual capital of the organisation. This research explores how organisational culture shapes the flows and stocks of knowledge of an organisation, which consequently affects its organisational success.

1.2 Statement of Research Problem

Knowledge management has been the subject of intense focus since the 1990s. Despite this, it remains an ongoing challenge for organisations for a number of reasons, including (1) focusing and implementing a single knowledge management solution rather than a comprehensive knowledge management solution (Barnes & Milton, 2015); (2) failure to understand context and how knowledge management is embedded in organisational activities and processes (Barnes & Milton, 2015); and (3) failure to recognise the position of people and culture when implementing knowledge-management strategies and approaches (Asrar-ul-Haq & Anwar 2016; Dalkir 2011). Because organisations today must thrive in an 'era of information overload' (Barnes & Milton 2015, p.8) and an 'era of big data' (Brown, Chui & Manyika, 2011), organisations must avoid taking a narrow view of knowledge management and instead need to adopt a more comprehensive and context-aware view of enabling knowledge for organisational success.

The literature shows that the core of all successful knowledge practices lies in not just the ability to integrate tangible assets with intangible organisational knowledge but also in the ability to facilitate organisational knowledge by enabling people to obtain a balance between personal and organisational needs in supportive ways. Organisational success depends upon the people in the organisation and their satisfaction is crucial for effective decision-making and performance (Asrar-ul-Haq & Anwar, 2016). Therefore, people-centred factors are significant

to our understanding of organisational context and organisational success. As such, exploring organisational culture as indicated by interpersonal trust, communication and technology support provides a strong foundation for solving many problems within the Saudi Arabian IT industry. Especially by enhancing a trust level between employees and managers to increase their communication levels using different technology support tools. This will benefit towards designing and promoting a sufficient knowledge-sharing environment for the sake of the organisational success from a financial and operational performance perspective.

1.3 Motivation

Discussion on the subject of knowledge, particularly its significance and contribution towards society, dates back to historical times. Ancient philosophers such as Socrates and Plato dedicated their lives to the pursuit of truth and to achieving enlightenment through knowledge. Modern disciplines such as economics, psychology and management investigate the topic of knowledge within their own contexts with emphasis on different aspects of knowledge, such as its creation, acquisition, distribution, economic significance and strategic implications.

In the field of knowledge management, aspects of knowledge have been studied and core-related with different factors of organisations in an attempt to obtain optimal efficiency and effectiveness. The purpose of this study is to understand the effect of organisational culture and its contributing factors in Saudi information technology (IT) firms on both Saudi and non-Saudi managers and employees. In addition to this, how the knowledge environment elements and process affect the relationship between knowledge-sharing factors and intellectual capital towards obtaining successful outcomes for the organisations is also explored.

Therefore, studying the relationships between the knowledge environment and knowledge-sharing factors will help enhance the usage of knowledge and the resources of its intellectual capital in the IT organisations in Saudi Arabia. The results of this study will help organisations to better form a knowledge base environment and allow them to transfer knowledge to benefit, codify, personalise, collect and donate the knowledge developed within the firm for the sake of the organisation's success from an operational and financial performance perspective.

1.4 Purpose, Research Aims and Objectives

The purpose of this study is to investigate the role of organisational culture in the knowledge environment from a knowledge-sharing and intellectual capital perspective in relation to

organisational success. First, organisational culture has certain factors that impact the knowledge environment: interpersonal trust, communication and technology support. Second, the main factors of the knowledge environment are knowledge-sharing type, knowledge-sharing approaches, the knowledge-sharing process, and intellectual capital. Third, the outcome of the study is to enhance the organisational success from an operational and financial performance perspective. This study attempts to assist IT firms in Saudi Arabia in understanding the essential role of organisational culture in sustaining and sharing knowledge so that they can become leaders in utilising the knowledge environment for the sake of organisational success.

The aim of this study is to examine the impact of organisational culture on the main pillars of knowledge environment processes and organisational success. Following this aim, the objectives of this research are:

- To investigate the impact of organisational culture on the knowledge environment ;
- To determine how knowledge-sharing affects intellectual capital;
- To develop a process flow of how to deploy knowledge-sharing elements in order to reach the highest possible level of organisational success; and
- To provide a research framework for both knowledge-sharing and intellectual capital factors and their main impact on organisational success.
- To compare the effect of organisational culture and knowledge environment influence on organisational success for Saudis and non-Saudis in Saudi Arabia's IT firms

1.5 Research Questions

The research questions addressed in this study are the following:

RQ1: How does organisational culture influence knowledge environment in the organisational success of information technology firms in Saudi Arabia?

a. From an employment perspective.

b. From an executive and management perspective.

RQ2: What are the main factors that influence the use of knowledge-sharing (knowledge-sharing type, knowledge-sharing approach and knowledge-sharing process) and organisational success?

RQ3: Towards the success of Saudi information technology firms the following questions are addressed:

a. How does the type of knowledge-sharing (explicit or tacit) impact on intellectual capital factors (human, structural and relational)?

b. How do knowledge-sharing approaches (codification and personalisation) impact on intellectual capital factors (human, structural and relational)?

c. How does the knowledge-sharing process (collection and donation) impact intellectual capital factors (human, structural and relational)?

RQ4: How does intellectual capital influence the features of organisational success in terms of operational and financial performance?

RQ5: How do the organisational culture and knowledge environment influence the organisational success for Saudis and non-Saudis in Saudi Arabia's IT firms?

1.6 Significance of the Study

This research specifically looks at Saudi Arabia, a developing country that is adopting a knowledge-based economy. A review of the literature showed that there is an inadequate understanding of the role of organisational culture on the main pillars of the knowledge environment process from a knowledge-sharing and intellectual capital perspective and the impact of this process on organisational success in Saudi Arabia's IT firms.

Economies are increasingly based on knowledge, which is now being recognised in Saudi firms as the country transitions to a knowledge-based economy, drawing attention to the roles of IT and learning in economic performance. The findings of this study will help Saudi Arabian IT firms identify and apply the main drivers of the knowledge environment process from a knowledge environment perspective. In addition to this, the results of this study will be of significance for Saudi IT firms as they will help these firms to achieve organisational success through positive operational and financial performance.

The input of organisational culture, the knowledge environment processes (including knowledge-sharing type, knowledge-sharing approaches and knowledge-sharing process) and intellectual capital in Saudi Arabia's IT firms will be of great significance in the actual practice of achieving organisational success in Saudi context. This research will add value to existing knowledge and will help firms in Saudi Arabia generate better outcomes from both Saudi and non-Saudi standpoints.

Therefore, examining the knowledge environment process from the knowledge-sharing and intellectual capital viewpoints in relation to organisational culture and Saudi IT firms will add

a new perception to the field. Three processes in the knowledge environment are examined. First, the knowledge-sharing type, which is the organisation's main resources of explicit and tacit knowledge; second, the knowledge-sharing approaches, which are the codification and personalisation of the knowledge; and, third, the knowledge-sharing process that collects and donates data. All of these processes contribute to the intellectual capital of the organisation, which is divided into three main types of capital: human, structural and relational.

Consequently, organisational success is the outcome factor identified within the research model that will clearly be developed throughout the study. The main output of this research is to develop a research model that depicts the role of organisational culture in Saudi IT firms and determine how these firms will benefit in gaining an enhanced outcome more efficiently and effectively.

Knowledge is perceived as being embodied in items such as tools, equipment and electronic document systems. In managing knowledge, the emphasis is on capturing, stocking and transmitting what people know through scientific logic, engineering principles, programmable methodologies and information-communication technologies. While we should be cautious of the idea that knowledge is all about building huge web-based simulations, we must make an effort to enable knowledge environments that have available and affordable technologies in order to share and transfer the right knowledge to improve effective capabilities and gain an innovative successful outcome within organisations (Nakamori, 2012).

1.7 Scope

The case studies examined in this study are limited to Saudi Arabian IT firms. The primary reason for choosing Saudi Arabia was the convenience of working with a broad number of firms from private, public, semi-public and non-profit organisations who have addressed the need for a transformation to knowledge-based organisations. The study was conducted within the following confines:

- The study was limited to the context of Saudi Arabian organisations (the term 'organisations' and 'firms' are used interchangeably throughout the thesis);
- The study emphasised the examination of organisational culture factors (interpersonal trust, communication and technology support);
- The study examined the factors of the knowledge environment, including knowledge-sharing (types, approaches and processes) and intellectual capital (human, structural

and relational), on organisational success in terms of both operational and financial performance; and

- The study examined the perspectives of both Saudi and non-Saudi executives, managers and employees on the influence of organisational culture and knowledge environment on organisational success in IT firms in Saudi Arabia.

1.8 Research Plan

1.8.1 Knowledge Compilation and Research Problems

This study conducted a literature review, which is a continuing process for any research's life cycle. Chapter 2 presents the studies that form the basis of the research development and the main objectives and significance of this research. Subsequent information that is drawn in this research follows these areas:

- Knowledge and knowledge management;
- Organisational culture setting in Saudi Arabia;
- Knowledge-sharing enablers and factors;
- Knowledge-sharing types;
- Knowledge-sharing approaches;
- Knowledge-sharing process;
- Intellectual capital factors;
- Organisational success factors; and
- Organisational financial and operational performance.

This stage was concerned with clearly defining the research borders in order to investigate the influence of organisational culture factors (interpersonal trust, communication and technology support) and knowledge-sharing factors (knowledge-sharing types, approaches and process) and intellectual capital factors (human, structural and relational) which are the knowledge environment main factors on organisational success from the perspective of its financial and operational performance.

Once the literature review was completed, it was clear that there was a gap in the knowledge; specifically, no scholar has attempted a research study that addressed organisational culture, knowledge-sharing and intellectual capital in Saudi Arabia's IT firms and the impact of these factors on the success of organisations' financial and operational performance.

1.8.2 The Development of the Theoretical Model

After identifying the gap in the knowledge, this study develops a research plan which supports the development of hypotheses and finding answers to the research questions. A visual representation of the research plan is shown in Figure 1-1. The research model presents the interrelationship between the constructs. The details of the constructs and their relationship are discussed extensively in chapter 3.

1.8.3 Development of Questionnaire and Pilot Study

A questionnaire instrument was developed as an approach for conducting research through a quantitative empirical investigation. In the survey questionnaire, an evaluation of each item is defined based on its relevancy and consistency with the research model factors. After the completion of the questionnaire design, a pilot study was conducted in IT firms in Saudi Arabia in order to refine the approach and techniques for the main research model. The final survey was conducted after the outcomes of the survey instrument were evaluated. The detailed information that was not forthcoming from the pilot study is discussed in chapter 3.

1.8.4 Data Collection

Then the questionnaire was created based on the operationally defined constructs and variables that were pre-tested and validated in previous studies sharing a similar nature to the current research. After the survey was designed, a number of companies were carefully selected to be part of the study by identifying organisations that were able to contribute to the study of the influence of organisational culture, knowledge-sharing and intellectual capital on organisational success in Saudi Arabia.

The University of Technology Sydney (UTS)'s ethics committee sent the surveys to Australia as per the regulations of the ethics application approval. After getting the ethics approval and receiving the questionnaire surveys from the selected organisations, the surveys were organised into separate folders with each organisations' name and the total number of participants.

Once the required number of IT organisations agreed to participate in the survey questionnaire, the researcher compiled the addresses of the participating organisations. Since the researcher was based at an Australian university and the research was conducted in Saudi Arabia, the researcher travelled to Saudi Arabia for three months and conducted the survey in three

different regions: Jeddah in the west region, Riyadh (the capital of the Kingdom of Saudi Arabia) in the middle region and Damam in the eastern region. These places were chosen based on the organisations' location. In each region, the researcher visited organisations personally and then the survey was distributed to employees by the managers and human resources (HR) department. After it was distributed, the researcher waited at each location until the surveys were done. This gave the researcher a high rate of completed surveys that were returned in a short period of time.

1.8.5 Data Analysis

IT companies of different locations, types, employees' work experience, size, nationality, language, gender and job titles were selected. The results of the questionnaire background information are discussed in detail in (Chapter 5). Once the data arrived at UTS, statistical techniques were implemented to analyse it. The data analysis serves to fulfil the main objective of the research study. According to Sekaran (2006), to analyse the data one must check the tendency and description, testing the sufficiency of the data by measuring the reliability and validity and, finally, testing the hypothesis for the research high significance. Quantitative analysis was conducted using the data obtained from 500 participants from 37 IT firms located in three different regions in Saudi Arabia. The central tendency and description of the data were examined using the implementation of basic statistics concepts, including mean, standard deviation and variance.

The first stage of the analysis was examining the descriptive statistics of the demographic information using statistical techniques to ensure that the data set was appropriately advanced and could be considered as a single data set. Then, a measurement scale analysis was employed to find Cronbach's alpha. Correlation also involved performing confirmatory factor analysis (CFA) for each of the model constructs/variables to determine the reliability and best factor structures, which led to the development and confirmation of valid model constructs. Structural equation modelling (SEM) was then conducted to initially evaluate and uncover the significance of the relationships between the constructs of the research model.

1.8.6 Validation of the Data

The results from the collected data analysed using the above stated statistical methods allowed the researcher to examine and consequently establish the internal validity of the research model. Therefore, the robustness of the research model can be improved.

After finalising the quantitative analysis, a qualitative validation was sequentially conducted to determine where the relationships illustrated in the research model could be sufficiently explained by the actual phenomena among the selected IT Saudi Arabian firms. Therefore, explanatory case study research was developed to address the hypothesis testing and answering the research questions. The case studies were conducted in 13 IT Saudi firms using semi-structured, face-to-face interviews as the primary data collection technique. This contains two main streams: within-case analysis and cross-case analysis. The within- case analysis provides an information and perceptions into how the research model and its constructs were perceived in the Saudi Arabian IT industry. The cross-case analysis will validate the results from multiple case studies by using an outline corresponding technique that connects the data from the theoretical propositions; by comparing patterns of actual values of variables to those predicted in the hypothesis in order to answer the main research questions of the study.

1.8.7 Recommendations and Submission

The results are interpreted accordingly to test the hypothesis and answer the research questions. A report of the findings and recommendations were then constructed to conclude the thesis.

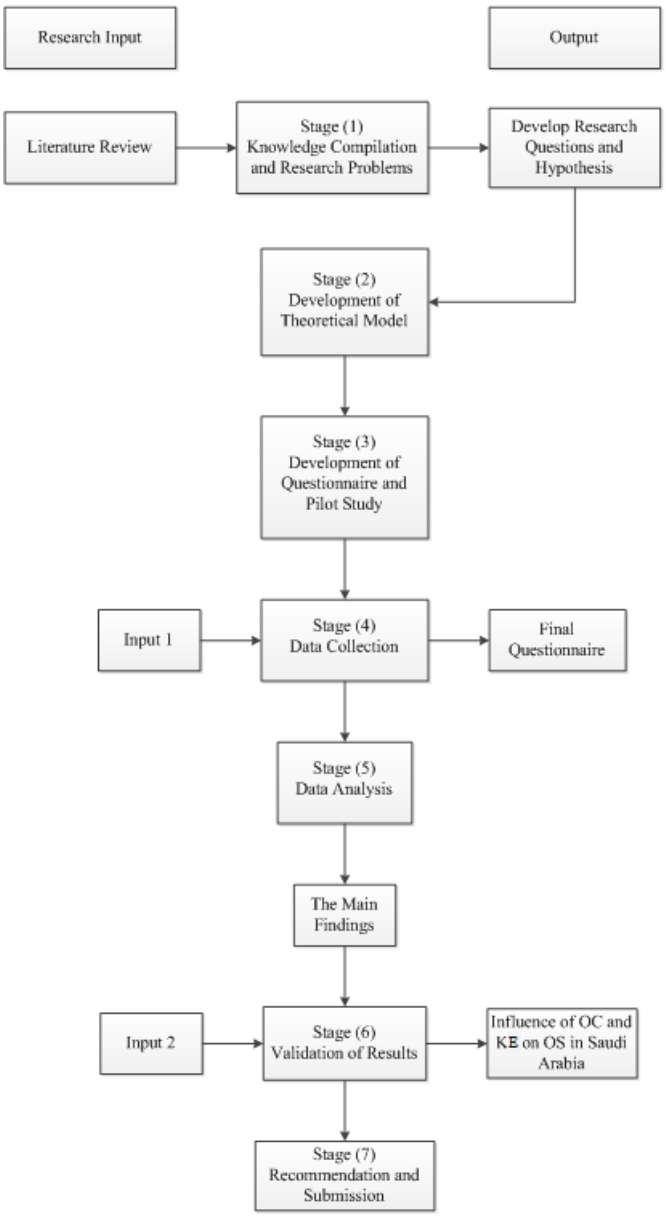


Figure 1-1: Preliminary Outline of the Research Plan

1.9 Thesis Layout

This thesis consists of 9 chapters. The current chapter (Chapter 1) presents the research study and outlines the problem statement, the purpose of the study and the scope of the study. An overview of the research method and outline of the thesis layout is also provided.

In chapter 2, the literature on the organisational culture theoretical domain is reviewed and the critical factors that control a company's success enablers are established. The three main sub-factors that are identified in the literature review as playing a vital role in organisational culture are interpersonal trust, communication and technology support. Then, a review of the literature on knowledge-sharing and management is conducted in order to identify its organisational sphere and its assets. This includes a critical review of recent publications concerning knowledge-sharing concepts, capability factors and approaches in Saudi Arabian organisational settings. The chapter also reviews all three knowledge-sharing factors (types, approaches and process) and intellectual capital (human, structural and relational capital), with the aim of exploring how these contribute to organisational success in terms of operational and financial performance. By focusing the study on Saudi Arabia IT organisations, this research aims to help them adapt their organisational culture and enable the contribution of knowledge-sharing enabler's contribution in order to facilitate innovation in the IT industry, which will add to the country's economy. The chapter identified several gaps that currently exist in the knowledge, with only one academic study examining this knowledge-sharing phenomenon in Saudi Arabia.

Chapter 3 describes the theoretical background and hypothesis development along with the research model of the current study. It starts by reviewing the relevant theories of the research models factors as extracted from the research frameworks used in existing studies. Each framework has certain factors that were used from the research model's main factors and sub-factors. Validating the frameworks that examine the effects of organisational culture, knowledge-sharing and organisational success helped in identifying the factors most suitable for the current research model. Then, a research model is developed based on the knowledge gaps discovered in the literature review and the highlighted research models and frameworks. Following this, research questions were formulated as a response to addressing the research gaps that had been identified during the literature review. In order to answer the research questions, a research model was developed based on the established theoretical frameworks.

The chapter also includes details of the research methodology and outlines issues related to the research approach.

Chapter 4 contains a detailed outline of how the research design and methodology validates and assesses the study's research model. This chapter describes the development of the research problems, the research's research model, questionnaire, pilot study and data collection. In addition to this, a detailed explanation of the data analysis phases of the quantitative data analysis, the validation of the data, the research instruments and their measures, and the survey instruments which explain each factor and its relation to the alignment for constructs, dependency, research questions and indicators of existence is provided. Following this, the pilot study, sample size, data collection, survey administration and data analysis statistical methods are explained. Phase A includes the quantitative data analysis, which is divided into three segments: descriptive data analysis, measurement scale analysis and SEM. Phase B explains the qualitative data analysis approach, case study design, data collection and, finally, the data thematic analysis.

The first analysis chapter is Chapter 5, which outlines the details and results of the descriptive analysis of the data collected from the questionnaire conducted with employees from Saudi Arabian IT firms. The profiles of the survey respondents are presented and the survey data is screened to ensure that it was suitable for multivariate statistical analysis. The descriptive statistics of each construct and the standard deviation, mean and variance shown in Appendix B are also presented.

The second analysis chapter is Chapter 6. This chapter presents the results of the measurement scale analysis, starting with the analysis results and the scale of reliability that helped measure the internal consistency of the measurement scales in the survey. Next, the CFA confirmed the identified factor structure, thus further strengthening the validity of each construct and its factors (presented in Appendix C).

In Chapter 7, the model assessment was sequentially adopted based on the results of the analysis discussed in Chapter 6. The chapter starts by providing an overview of the SEM technique used in the assessment process. This is followed by an initial assessment of the results that demonstrates the statistical significance of the relationships between the constructs of the model, which implied the acceptance or rejection of the hypotheses stated in chapter 3. After this step, the research model was refined so that the degree of the selected fit indices

demonstrates that the results are as good as possible. Finally, a tested and validated model is presented based on the quantitative analysis. Specifically, this chapter illustrates the procedure of finding the relationships between the constructs and the variables of the research model comparison between the Saudi and non-Saudi samples; therefore, testing the hypothesis and findings answers the research questions from an empirical side. The SEM analysis and correlation analysis are types of exploratory approaches that reveal the strength of the relationships between constructs (explained in detail in Appendix D).

Chapter 8 shows the validation of the empirically tested model discussed in previous chapters. In particular, this chapter details the qualitative research technique and outcomes based on explanatory case studies of 13 IT Saudi firms. That process includes developing the predicted relationship patterns, which are matched to the results of the pattern analysis of the 13 organisations. The results from this process indicate that the actual organisational dimension can validate the research model significantly. The chapter concludes with a deep and extensive discussion of the potential factors that confirm the results and explore any variance between the results and the experts' point of view. This technique was used during face-to-face interviews with executives and managers in the field of study in Saudi Arabia's IT industry. The results of the empirical research model are shown in detail in Appendices E, F, G and H.

The final chapter, Chapter 9, summarises the general outcomes of this research study, identifying the contributions of the study to the existing body of knowledge as well as the implications of the findings of this research for Saudi Arabia's IT firms. It also suggests recommendations for future research and notes the limitations of the study. Subsequently, the reference list, additional information (for example, the survey tools of the survey questionnaire and the case studies' protocols and results) are provided in Appendices A through H.

Chapter 2: Literature Review

The literature review chapter presents reviews existing studies and identifies the main factors that have been developed in previous studies in order to develop a final research model shown in the upcoming chapter 3 in Figure 3-8. An overview of the introduction of the research study in the provided Section 1.2 and general information on Saudi Arabia in Section 2.2. Section 2.3 outlines the main studies on organisational culture and explores how the differences in each study while also identifying each study's major sub-factors. Section 2.4 gives an overview of knowledge-sharing and management, which is one of the major factors of this research. Then, Section 2.5 discusses the knowledge environment, which is the second major factor of the study. The four major sub-factors of the knowledge environment are discussed in the following sections: Section 2.6 details knowledge-sharing types, Section 2.7 explains knowledge-sharing approaches, Section 2.8 clarifies the knowledge-sharing process and Section 2.9 describes intellectual capital. Finally, Section 2.10 explains the third outcome of the major factors of the study, organisational success, and Section 2.11 summarises the chapter.

2.1 Introduction

There is a growing body of evidence that suggests that culture is the pivot of knowledge management processes in organisations. This chapter reviews the existing literature to establish the association between culture and knowledge-sharing as well as identifying a gap in the knowledge on how organisational culture shapes knowledge-sharing and the knowledge management process in general. The operationalisation of organisational culture stems from understanding the definitions of culture and the indicators of organisational culture.

There is an enormous amount of literature on knowledge-sharing in organisations. This chapter reviews this body of literature in order to explicate the different aspects of knowledge-sharing in organisations. The study then develops the construct of the knowledge environment. This construct is divided into three parts. The first part consists of the types of knowledge shared among employees –explicit knowledge-sharing and tacit knowledge-sharing. The second part focuses on the knowledge-sharing processes that facilitate the exchange and flow of knowledge between and among individuals in an organisation. These are knowledge donation and knowledge collection. The third part revisits the knowledge management/sharing approach, which denotes the organisation's choice between emphasising knowledge codification, knowledge personalisation or both. As the above three aspects focus on the flow of knowledge,

the chapter reviews the aspects of intellectual capital which are also the stocks of knowledge in the organisation. This chapter has three major sections: organisational culture, the knowledge environment and organisational success operationalised as operational performance and financial performance.

2.2 General Information on Arabic Culture

The literature related to the success of business systems identifies a need for organisations to continually advance their efficiency and effectiveness, as doing this can lead to the development and improvement of organisations. In an Arabian cultural context, there is 'evidence that the "culture" and its implications have noteworthy effects on how employees behave, deal and interact with management according to different managerial practices' (Obeidat et al., 2012, p.512). Therefore, Arabic organisations have to familiarise themselves with the variations in cultural aspects to avoid negative consequences and poor organisational performance (Cassell & Blake, 2012; Obeidat et al., 2012).

Writing in the early 1990s, Bjerke and Al-Meer said that the 'development in some parts of the Arab world is truly impressive' (1993, p.32). This was due to 'the unprecedented economic boom in oil producing countries has encouraged the establishment of modern welfare states, made enormous government investments possible, and created business opportunities for the Arab executive' (Muna, 1980) cited in (Bjerke & Al-Meer, 1993, p.32).

Western awareness of the Arab world, including Saudi Arabia, jumped sharply with the oil boom of the early 1970s; however, those who entered Saudi Arabia found a "strange" and "different" world. Several stereotypes of Saudis developed, including the one of Saudi Arabians lacking individuality, controlled by fatalism, and not concerned with rational economic considerations. Cultural differences are often the subject of narratives and stereotypes demonstrate a failure to understand Saudi Arabian culture.

Like other nations, Arab managers do not exist only in an economic or social space. They are heavily influenced by the social structure of their society and by the values, norms and expectations of its people. Saudi Arabia is a major oil-producing country. Its fast development has demanded a heavy use of emigrants in its workforce. In spite of an extensive interaction with other nations and although major changes have taken place in such aspects as the use of modern technology, education, and infrastructure, that the basic culture of the Saudis has

changed very slightly throughout the years because the shift from an oil-reliant economy to a knowledge-based economy within the county.

The cultural setting of Saudis is Arabic and Muslim. According to Eid and Nuhu (2011), Saudi Arabia has a unique culture and heritage that has been conserved over the time. Visitors to Saudi Arabia, including non-Saudis, are subjected to the same rigorous Islamic law as Saudis. In this regard, different enterprises in Saudi Arabia are largely influenced by the cultural aspects of the Saudi community. For example, when it comes to hiring employees in an organisation, there will be a clear stipulation that employees, whether of Saudi origin or otherwise, will be governed by similar policies and will follow similar requirements for their enterprises. This is influenced by the religion that is followed in Saudi Arabia, which is Islam. The Muslim life thus plays a vast role in influencing the business community in Saudi Arabia.

Saudi Arabia has a deep driver of knowledge on its own culture in relation to many other countries. According to Hofstede's perspective of culture, Saudi Arabia is considered a vertical culture rather than horizontal in that whomever is on the top of the organisational hierarchy has more power than those who are located at the bottom of the grading system. Individuals in societies are not equal and this expresses the attitude of culture towards the inequalities they have between each other. In terms of power distance, in Saudi Arabian culture, an individual with a higher rank is considered more powerful than whomever is below them within an organisation. This means that in Saudi Arabia, people are more accepting of a hierarchical order in an organisation that has inherent inequalities than in countries with a lower power distance.

Hofstede's study shows that Saudi Arabia is oriented towards a high power distance, collectivism, masculinity, high uncertainty avoidance and short-term orientation. A description of the Hofstede's findings on Saudi culture is provided in Table 2-1.

Table 2-1: 5-D Model of National Culture in Saudi Arabia

Cultural dimension	Description	Nature of society
High power distance	A cultural orientation where individuals expect and accept the unequal distribution of power.	-Respect for superiors and one's elders. -Power is a core aspect of society. -Mass use of technology. -Limited access to resources.

		-Information is localised. -Uneven income distribution. -Low entrepreneurial and human development capabilities.
Collectivism	A cultural orientation where individuals build strong ties and cohesion in society.	-People think in terms of "us". -Indirect communication. -Integration into cohesive groups. -Value placed on group activities. -Duties and obligations are important. -Limited use of the Internet. -Introverted personalities. -Social networks are the source of information. -Strong emphasis on tradition.
Masculinity	A cultural orientation that defines gender roles.	-Internet is used for fact-finding. -Performance ratings. -Quite competitive. -Use report rather than rapport in official meetings. -Value good relationships with supervisors. -Prefer small-scale enterprise.
High uncertainty avoidance	A cultural orientation where people have a low tolerance of risk and ambiguous events.	-Uncertainty is interpreted as a threat or dangerous. -High levels of stress and anxiety. -Fear change. -Low trust. -Formalised interaction.

		-Emphasis on structures, rules, policies and procedure.
Short-term orientation	A cultural orientation that fosters virtues relating to the past and present.	-Slow societal growth. -Success is attributed to luck. -Personal stability is important. -Focus on quick results.

(Cassell & Blake 2012; Hofstede 2011; Hofstede, Hofstede & Minkov 2010)

Arab gregariousness is well known and well documented. Islam is considered a vital source for the high collectivism orientation. Saudi managers, as Muslims, are required to co-operate with other Muslims and to share one another's sorrows and happiness. Saudi managers live in a society where family and friendship are significant and influential factors in the functioning of institutions and groups. Bjerke and Al-Meer note, 'When Arabs meet their [compatriots], for the first time, they usually attempt to establish each other's family identity' (1993, p. 33). Saudi managers rely on family and friendship ties for getting things done within organisations. Due to this, however, sometimes formal planning systems and business policies may become only "shells" or "facades" within which smaller groups, factions and families operate to the detriment of the efficiency and the effectiveness of the corporation as a whole.

2.2.1 Saudi Arabia and the Knowledge-Based Economy

Saudi Arabia is one of the largest economies in the Middle East with 25 percent of the Arab world's gross domestic product (GDP). Saudi Arabia is also a leading country in the oil Organisation of the Petroleum Exporting Countries (OPEC) (Alnatheer, 2012). The Kingdom relies strongly on natural resources as its major economic growth, with the petroleum sector accounting for roughly 87 percent of the country's budget revenues, 42 percent of its GDP and 90 percent of export earnings in 2017 (Forbes, 2017). This dependence on natural resources is problematic for future competitive advantage; therefore, Saudi Arabia is encouraging the growth of the private sector in order to diversify its economy and create employment for Saudi nationals. In 1983, March stated that 'the conversion of an oil-reliant economy to a knowledge-based economy was an outstanding revolution that followed the discovery of oil more than three quarters of a century ago' (Nurunnabi 2017, p.536). The Saudi government's Vision of 2030 and the related National Transformation Program 2020 both stress the importance of diversifying the economy through the development of a knowledge-based economy

(Nurunnabi, 2017). The Organisation of Economic Co-operation and Development (2007) finds that knowledge and technology have become increasingly complex, raising the significance of associations between firms and other organisations as a way to procure specialised knowledge. An equivalent economic development has been the growth of innovation in services in advanced economies. "The knowledge-based economy" is an expression coined to describe tendencies in advanced economies towards greater dependence on knowledge and the high skill levels increasingly needed by the business and public sectors.

2.2.2 Saudi Arabia Information Technology Markets

According to the *Saudi Economic Survey* (2011), the Kingdom of Saudi Arabia has one of the largest IT market in the Middle East region, with a market value of US $4.9 billion dollars in 2014. The growing population of the Kingdom and its high demand for e-services in both the public and private sectors means that the Saudi government needs to enhance public programs in order to meet the needs of the public. Therefore, the Kingdom of Saudi Arabia has increased their spending on infrastructure and educational programs to address the demand for advanced technology and solutions for its growing e-government market. The effective use of IT in Saudi Arabia will enhance governance in order to identify and overcome the change and challenges for the IT industry within the country.

2.3 Organisational Culture

Organisational culture is recognised as a vital aspect of both the theoretical and executive domains. There are many definitions of organisational culture. One common definition is provided by Schein, who defines organisational culture as a

> 'pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems.' (2004a, p. 17)

This defines the sole rationale of organisational culture and establishes its importance in the success of the organisation's operations and actions. Therefore, the success or failure of the organisation depends upon its culture (Schein, 1996).

Organisational culture is the most fundamental and constant strength within any business as it denotes its sustainability (Schein, 2004a). Hofstede (1991) suggests that it is imperative to

recognise the difference between national and organisational culture. He maintains that national culture mostly stems from uniformity in principles, while organisational culture mostly originates from uniformity in practices (Hofstede, 1991).

The underlying question when studying organisational culture is how should we think about the "essence" of organisational culture and can it be formally defined? Schein argues that the most useful way to arrive at a definition of something as abstract as culture is to think in dynamic evolutionary terms. If we can understand where culture comes from and how it evolves, then we can grasp something that is abstract; something that exists in a group's unconscious, yet still has powerful influences on a group's behaviour.

Organisational culture is an abstraction and therefore hard to define. Each person may have his or her own understanding of culture. There are hundreds of types of organisational culture, each of which has their own point of view and outlook. A study of hundreds of definitions of organisational culture by Kroeber et al. (1952) found that there are 164 meaning of culture and the definition of culture has changed over time. There is no fixed, universal definition or understanding of culture, and no one definition of organisational culture. The definitions of a number of researchers in the academic sector of organisational culture are shown in Table 2-2

Table 2-2 Existing Studies of Culture Definition

Source	Definition	Critical core of organisational culture
(Kluckhohn, 1951)	Organisational culture covers patterned ways of thinking, feeling and responding and is conveyed by symbols, establishing the characteristic achievements of human groups, including their expressions in artefacts.	Consists of traditions (i.e., historically derived and selected) ideas and particularly their attached values.
(Kroeber & Parsons, 1958)	Culture in this sense includes the organisation values, where values are one of the contributions of culture.	Arrives at a cross-disciplinary definition of culture as conveyed and created content and outlines values, ideas and other representative meaningful systems as features in

		determining human behaviour and the artefacts formed through behaviour.
Guilford (2004)	Personality that regulates the identity of an individual within the group.	Culture could be defined as the communicating combination of common characteristics that influence a human group's reaction to its environment.
(Hofstede 1984; Hofstede, Hofstede & Minkov, 2010)	Organisational culture is a combined encoding of human minds and is related to entire groups within societies. Cultural outlines are ingrained in the value organisation of major groups of the population and how they are stabilised over long periods in history.	Culture is reproduced in the products of the mind such as language, myth, art, kinship, norms, values and shared meanings about social behavior (Keesing & Casson, 1981)
(Schein 2004a, 2010)	Organisational culture is characterised by the attitudes, beliefs, experiences and values of people in a given organisation. Schein also emphasises that organisational culture is the deepest level of basic assumptions and beliefs that are shared by the members of the organisation.	Members of the organisation operate unconsciously and in a basic "taken for granted" fashion of an organisation's view of culture and its environment.
(MacShane & VonGlinow 2003; Von Glinow & McShane 2006)	Organisational culture is defined as the fundamental model of mutual assumptions, principles, and values that are considered as the right way of thinking about and acting on troubles and opportunities opposing the organisation.	Thinking of opportunities to solving problems is the main aspect of the organisation.

Hofstede's (1984) definition of organisational culture – where cultural patterns originate from the value systems of groups within the population of similar societies – is considered of high relevance for many researchers because of its emphasis on culture and its effect on the human mind programming of groups within societies. In contrast, Schein focuses more on a definition of organisational culture in which it holds certain characteristics of attitudes, beliefs, experiences and values of people in a given organisation.

Therefore, the role of both culture and organisational culture depends highly on the behavioural background of the people who are the main members of a society. Behavioural influence generates a competitive advantage for employees' performance within organisations for a number of reasons. First, a strong culture within any organisation helps group members to understand problems, evaluate situations, share values and unites people to behave and perform in the correct and proper manner. Secondly, identifying a problem and evaluating a suitable solution will help during the decision-making process. Third, a strong culture will support the development of a positive relationship among members of the group and facilitate a successful working environment within the organisation.

Organisations must consider their culture as one of the most critical factors that controls their capability, efficacy, endurance and success. Organisations may define their culture based on the mutual trust, profound communication/collaboration and IT support provided by one team or individual to another.

2.3.1 Interpersonal Trust

Trust is an entity's 'willingness to be vulnerable to the actions of another' (Johnson & Cullen 2002, p.336). Trust embodies the beliefs about the anticipated behaviour and intentions of the involved entities (Johnson & Cullen, 2002). The concept of trust is deeply rooted in culture theories such as those listed in Table 2-2. Subsequent studies on trust (Kang & Sohaib, 2016), have operationalised trust into various types, the most important of which is interpersonal trust (Leimeister, Ebner & Krcmar, 2005; Paul & McDaniel Jr, 2004).

Organisational culture and knowledge-sharing are social aspects, but trust is a social reality (Lewis & Weigert, 1985). To foster an organisational culture sufficient for knowledge-sharing, organisations will have to recognise the role of trust among employees. This is because there is evidence to suggest that trust will influence knowledge-sharing and creation among a group

of people (Abrams et al., 2003; Kivrak et al., 2014). Such a view of trust relates closely to interpersonal trust, which is the extent to which employees rely on each other to pursue their duties (Leimeister, Ebner & Krcmar, 2005; Paul & McDaniel Jr, 2004). Interpersonal trust is the pivot of social systems and is governed by affect and cognitive-based trust (Lewis & Weigert, 1985; McAllister, 1995) and behavioural trust (Lewis & Weigert, 1985).

Affect-based trust is when emotional ties with expectations of reciprocity link individuals in a relationship (McAllister, 1995). Cognitive-based trust is built on first impressions rather than experiential personal interactions (Gefen, Karahanna & Straub, 2003; Kanawattanachai & Yoo, 2002; McAllister, 1995) while the opposite is true for affect-based trust (McAllister,1995). Affect-based trust and cognitive-based trust are dissimilar but mutually related configurations of interpersonal trust; however, affect-based trust may not necessarily turn into cognitive-based trust, and cognitive-based trust may not ensure affect-based trust and subsequent collaboration (Chowdhury, 2005). The 'behavioural content of trust is the undertaking of a risky course of action on the confident expectation that all persons involved in the action will act competently and dutifully' (Lewis & Weigert, 1985, p.971).

There is evidence to suggest that an increase in trust positively influences performance and cooperation (Abrams et al., 2003; de Jong, Dirks & Gillespie, 2015; Kanawattanachai & Yoo 2002; McAllister, 1995; Paul & McDaniel Jr, 2004). Exchange processes are effected through trust (Johnson & Cullen, 2002). It is important to note that national culture, like the Saudi culture, has a significant bearing on trust (Johnson & Cullen, 2002; Lu et al., 2017). For instance, cultures that tend towards uncertainty avoidance greatly influence people's cognitive-based trust (Hwang & Lee, 2012; Karahanna et al., 2013). The collectivist nature of culture will affect people's attitude towards knowledge-sharing, their intention to share knowledge and their knowledge-sharing behaviour (Arpaci & Baloğlu, 2016; Zhang, De Pablos & Xu, 2014). In spite of this, managers ought to remember that advances in trust may not necessarily indicate better collaboration (Ng & Chua, 2015). Consequently, the influence of culture may differ according to context and thus may be insignificant in some cases (Li et al., 2007). According to de Jong, Dirks and Gillespie (2015), trust evocatively foretells effective collaboration, especially when trust in a group's forerunner and past performances are controlled. The issue is that interdepartmental relationship and trust is of utmost importance, as it can lay the foundation of effective and productive communication and collaboration towards knowledge-sharing and organisational success. Without trust, inter-group rifts within an organisation could

result in detrimental and counterproductive outcomes (Bennett & Gabriel, 1999). Organisations that seek common understanding and build trust will create a base for conflict resolution (Malhotra & Majchrzak 2004).

Leadership plays a very vital and significant role in maintaining and retaining the organisational culture (McShane & VonGlinow, 2003; Von Glinow & McShane, 2006). It is the leadership – the people sitting at the helm of affairs – who drive the organisation and give the commands and requisite direction under which the organisations flourish and nurture.

2.3.2 Communication

An act of communication involves the transmission of messages between a sender and a receiver. There are three issues crucial in the communication processes –the communication style adopted by the sender, the communication media or technology used to facilitate communication and the ability of the receiver to interpret the message. There are two communication styles, both of which managers may have to assess in order to determine the most effective style in different contexts one-way communication and two-way communication (Mead & Jones, 2002). One-way communication is a unidirectional communication style in which the sender chooses what to communicate, decodes a message and transmits a message. The receiver decodes the message and concedes the message. In contrast, two-way communication is bidirectional communication where the receiver not only concedes but also reacts to the message and choses what to communicate as feedback and the cycle continues. The notable differences between the two communication styles is that in one-way communication no feedback is expected: the sender exercises control and the receiver is quite submissive to the sender. In two-way communication, feedback is valued and therefore expected and accepted. The sender and receiver feel able to communicate back and forth, so the sender does not overrule the receiver.

The medium of communication shapes the evolution of a social system and behavioural change, regardless of whether IT or physical support occurs. The communication medium used in organisations varies between rich and lean mediums in terms of its ability to allow for the exchange of equivocal or canonical information or knowledge (Daft & Lengel, 1986; Klitmøller & Lauring, 2013). Managers must remember that cultural issues are core determinants of whether a particular media is rich or lean (Klitmøller & Lauring, 2013). Moreover, cultural differences and the media used will affect knowledge-sharing in an

organisation (Klitmøller & Lauring, 2013). However, the symbolic cues offered by the media of communication improves the receiver's ability to interpret the message (Trevino, Lengel & Daft, 1987). Media richness is critical for effective knowledge-sharing and transfer (Joia & Lemos, 2010; Panahi et al., 2016). It is important for an organisation to think about the richness of its communication systems and approaches because a rich media will ultimately enhance user experience, support effective communication and encourage continued use.

Culture influences communication style and the interpretation of the message during communication (Mead & Jones, 2002). Additionally, the richness of an organisation's communication media, approaches and/or systems are also shaped by the cultural background of the organisation, which ultimately affects knowledge-sharing (Klitmøller & Lauring, 2013). A person's orientation towards power distance, uncertainty avoidance and collectivism versus individualism will influence their preference of one communication style over the other (Mead & Jones, 2002). For instance, high power distance, high uncertainty avoidance and collectivist cultures, such as Saudi Arabia, influence people towards appreciating a one-way communication style (Mead & Jones, 2002). Moreover, effective communication depends on how one deals with uncertainty (Luque & Javidan, 2004).

Good communication practices increase trust within members of an organisation (Malhotra & Majchrzak, 2004). Communication is a core driver for employees' commitment to organisational activities (Femi, 2014) and employees' engagement, both of which affect employee performance and organisational performance (Bedarkar & Pandita, 2014). Furthermore, explicit communication norms are essential for the effective use of IT support (Malhotra & Majchrzak, 2004). Organisational culture, such as communication, interpersonal trust and IT support, may facilitate organisational learning, which is the practice of producing, retaining and transmitting knowledge within an organisation (Bennett & Gabriel, 1999). Organisational learning is a continuous phenomenon through which organisations improve over time (Kaplan et al., 2014). Learning through experience enables an organisation to generate knowledge which, after due processing, is transformed into information and thus develops the organisational culture (Frost, 2010). Organisational culture includes the relationship between employees working at different tiers. If it based on mutual trust, organisational culture will result in harmony of effort and better productivity. Knowledge being an integral part of the whole process will only bear the desired results if it is facilitated by the presence of a common understanding (Hedlund, 1994).

2.3.3 Technology Support

An organisation's culture, knowledge and technology infrastructure are significant elements to examine when trying to understand an organisation's knowledge environment (Gottschalk, 2000; Lee & Choi, 2003). The role of organisational culture not only raises the issue of trust among employees and departments: different cultures may require different technologies to support communication and sharing (Klitmøller & Lauring, 2013). The issue of technology support then becomes an important element of consideration in organisational culture. IT support, in the sense of this study, relates to the ability of organisations to develop an IT environment sufficient for facilitating its knowledge management practices and the utilisation of intellectual capital. IT support is an enabler for task organisation and innovation for improved team performance (Seeber, Waldhart & Maier, 2014). However, IT support for knowledge management indirectly affects organisational performance depending on the organisation's set of dynamic capabilities (Wang, Klein & Jiang, 2007). Organisational strategies towards IT support seek to overcome IT shortfall and IT underutilisation (Reynolds & Yetton, 2015). Based on Reynolds and Yetton (2015), IT shortfall occurs when an organisation's IT infrastructure cannot fully support its knowledge management practices and the utilisation of intellectual capital. IT underutilisation, on the other hand, occurs when an organisation spends more on its IT infrastructure than that what is needed to support its knowledge management practices and the utilisation of intellectual capital.

There are four aspects of IT support that organisations looking to facilitate knowledge-sharing should consider: task coordination, external connectivity, distributed cognition and interactivity (Malhotra & Majchrzak, 2004). Task coordination is ensuring that people are well informed about the progress of their tasks, for example through task scheduling and defining expected outcomes. External connectivity is enabling people to seek additional assistance beyond that what is readily available in the organisation, such as through networking and access to electronic directories and repositories. Distributed cognition is using IT to enable people to share and integrate diverse perspectives, for example, through access to multiple sources of content. Interactivity is enabling people to exchange information and knowledge in an interactive and simultaneous manner, such as through co-authoring and content aggregation. IT support is also directly related to the technology skills of individuals and teams and the existence of an atmosphere of mutual cooperation among workers to ensure prosperity and progress for the organisation (Quink, 2008).

2.4 Knowledge-sharing and Management

Knowledge management is the process of capturing, evolving, sharing and efficiently employing organisational knowledge. It denotes a multiple action approach to achieve a set of objectives by utilising the requisite knowledge optimally. Knowledge management efforts normally place emphasis on attaining sets of objectives like improvement in performance, economic advantage, modernisation, integration, the sharing of experiences/lessons learned and the constant improvement of the organisation (Gao, Li & Clarke, 2008). Knowledge management overlaps organisational learning and the basic difference lies in identifying knowledge management as a strategic asset focused on the sharing of knowledge (Paroutis & Al Saleh, 2009).

Knowledge management in an organisational sphere is considered a complete and separate department that is tasked to stimulate a cohesive approach to recognising, registering, assessing, retrieving and disseminating the organisation's information assets. These knowledge-based assets includes databanks, documents, guidelines, techniques and records of un-captured capabilities and experience in independent workers.

Knowledge in an organisation is always created at four different tiers, where it is collected, correlated and presented for making decisions. These levels are as follows:

- *Individual level*: Acquires new skills or concepts and efficiency at work increases as the employee attains expertise.
- *Group or team level*: Acquiring, sharing and combining the knowledge gained through experiences with one another. On this tier, the group executes actions, acquires feedback and utilises that response to alter their future actions.
- *Organisational level*: Successfully adapting to a varying environment and adjusting efficaciously under ambiguous situations.
- *Inter-organisational level*: Different organisations in an alliance cooperate and share the knowledge attained and ultimately learn from each other's experiences, thus improving their processes and products by incorporating new visions and knowledge (Al-Adaileh & Al-Atawi 2011).

2.5 Knowledge Environment

Knowledge-sharing is significant to organisations, where it facilitates developing skills and increasing value for enhanced competitive advantage. Knowledge is a firm's most valuable

resource. This intangible asset facilitates the creative process and is difficult to imitate; for example, where the exchange of knowledge determines the introduction of new products and services. There are some processes through which individuals alter, use and transfer knowledge between the members of an organisation. The most significant among such processes are collaboration and knowledge-sharing.

Collaboration both within the organisation and with other organisations is often considered to represent a crucial aspect affecting the overall performance of a company (Boehm, 2012). Knowledge-sharing is an essential element in the establishment of knowledge-based working environments within a company. Knowledge-sharing within a working environment is essential as it enables employees to increase their working skills (Bock et al. 2001). Teamwork is also critical to knowledge-sharing. The nature of problem-solving today is structured in such a way that teamwork will enable an organisation to establish support and help as part of the organisational culture, therefore delivering the services that are in high demand in the organisation (Ke & Wei, 2008).

There is increasing recognition that the competitive advantage of a firm is dependent on their ability to create, transfer, utilise and protect difficult to imitate knowledge. Following other knowledge-based accounts may allow organisations to handle the development of knowledge more effectively than markets in certain cases. Davenport and Prusak (1998), for example, talk of 'knowledge markets' which combine collective human activity with information technology to organise information and make it more useful for a community's consciousness. There are several reasons why it is difficult to create a market in knowledge information. One of these is that knowledge often lies not with individuals but is distributed among a group of people working together, therefore, 'at this level, the market's role is at least partially pre-empted and forms of deliberate (rather than self-) organisation may become as significant'(Nonaka & Teece, 2001, p. 50).

Robertson and O'Malley Hammersley (2000) suggest that one of the main factors contributing to the innovative success of the knowledge-intensive firm they studied was its highly egalitarian environment that was characterised by a belief in the equality of all people, especially in political, economic or social life. The organisation de-emphasised hierarchy, had only one level of management and the majority of decision-making involved a significant number of consultants. Management communicated constantly with employees to keep them

informed. Shell et al. (1999) agree that information is likely to be shared more freely in egalitarian work environments where employees are empowered and status barriers are eliminated.

Today, many organisations have realised the significance of knowledge as a key factor of its main intangible resource. This is mainly done by identifying the source of knowledge of the organisation from the external environment to identify knowledge sources. Then, the use of knowledge will involve the integration of external and internal knowledge and will thus help enhance the organisation's problem-solving procedures and support managers in decision-making. Through this integration, new knowledge is created in which I call the "knowledge environment".

Knowledge-sharing is the process by which knowledge is distributed across an organisation. Knowledge-sharing comprises two process dimensions: formal and informal. According to Cohen (1993) organisational cultures are a complex combination of both formal and informal systems, processes, and interactions. As for the formal components of organisational culture were leadership, structure, policies, reward systems, socialisations mechanism, and decision processes are comprised among many other things. On the other hand, informal culture components applies only implicit behavioural norms, role models, rituals, historical anecdotes, and finally language. For example, knowledge can be shared between employees in informal processes such as in meetings, seminars and workshops or through company knowledge databases and internal documents. Informal processes consist mainly of informal discussions between individuals that can be encouraged through the organisation providing time, space and social initiatives for this purpose. Providing suitable places to socialise or scheduling tea/coffee breaks can encourage people to meet and share ideas and knowledge. Specific knowledge projects intended to support knowledge-sharing processes can also be implemented.

The main problem an organisation faces in transferring knowledge occurs because of two main factors: interpersonal trust between employees and trust in management. Both of these factors have an effect on organisational performance. The concept of trust is problematic with respect to the definition of trust itself, and the outcomes of trust are often confused. Trust leads to increased overall knowledge exchange, makes trust less costly and increases the value of knowledge taken from a colleague.

Inside an organisation, learning involves the transfer of knowledge among different organisational divisions; such knowledge transfer occurs in a shared social context in which different divisions are linked to one another. Organisational divisions are embedded in a network coordinated through processes of knowledge transfer and resource-sharing (Gresov & Stephens, 1993). This network of division links enables organisational divisions to gain critical competencies that contribute to their competitiveness in the marketplace.

Inter-divisions links and networks are an important part of the learning process in which organisational divisions discover new opportunities and obtain new knowledge through interacting with one another. In addition to this, research on the knowledge-based view of the firm has suggested that social networks facilitate the creation of new knowledge within organisations (Kogut & Zander 1992; Tsai 2001). Through the development of inter-division networks, the horizontal transfer of knowledge broadens organisational learning. As Huber (1991) suggests, a learning organisation is characterised by motivated divisions that are intimately connected to one another. By linking different divisions together, a network arrangement provides a flexible learning structure that replaces old hierarchical structures.

Knowledge transfer is the process of passing on knowledge between intellectual systems. When it takes place within a firm, among different units, groups or individuals, it overlaps with knowledge-sharing. When it involves the inter-organisational dimension, it has common characteristics with many knowledge-gaining processes. The main difference between the two knowledge transfer processes is the disparity in their use. The former is intended to make individual or team knowledge organisational knowledge, while the latter works towards creating a channel and content to enable the organisation to acquire knowledge that has been generated from outside. Both intra- and inter-organisational knowledge transfers are based on communication processes that involve both information and interpretation in order to allow the knowledge owned by the sender to be acquired and absorbed by the receiver. It is significant to point out that the nature of the transferred knowledge should determine the method of communication technology. The effectiveness and efficiency of knowledge transfer processes are affected by the absorptive capacity of the receiver, which is related to a shared knowledge background between the sender and the receiver. If they share a common technical and cultural experience, the performance of the knowledge transfer process is improved by reducing the uncertainty of the information interpretation process.

The combination of information technology and co-aligned organisational process can significantly enhance learning and competitive advantage. In addition to this, the conversion of tacit to codified or explicit knowledge assets in knowledge transfer and sharing can possibly help to make firms more innovative and more productive.

Once knowledge is made explicit, it is easier to store, reference, share, transfer and hence re-deploy. Cutting the other way is the fact that once it is codified, it is sometimes harder to protect. Once data is held electronically, it can be sent almost anywhere in the world in seconds. In the wrong hands, it can "'leak out"' comprehensively and quickly. However, the absence of strong intellectual property protection is usually not sufficient to warrant managerial strategies in favour of overturning the conversion of tacit knowledge to explicit knowledge as such destruction harms the owners' ability to use, reuse and combine such knowledge. Moreover, in most jurisdictions, there is some form of trade secret protection that provides a means of protection against the misapplication of explicit knowledge.

2.5.1 Knowledge-sharing Types

Theoretical orientations on organisational knowledge have identified two types and/or dimensions of knowledge shared and managed in organisations. These two dimensions led to evolution of two schools of thought on the core aspects of organisational knowledge. The first and most longstanding stance asserts that knowledge is managed through IT systems as a means of improving its productivity and value to the organisation (Alavi & Leidner 1999, 2001; Bogner & Bansal 2007). A more recent and still emerging line of discussion encourages organisations to focus on the role of people and social interaction in fostering knowledge-sharing, knowledge transfer and knowledge creation. These have generally reconsidered knowledge management to be a social process regarded as social knowledge management (Newell 2015; Newell et al. 2002, 2009; Shuhua 2008; Tsoukas 2005). This school accords more recognition to the role of tacit knowledge over explicit knowledge to the extent that some studies (for example, Saint-Onge 1996) have considered tacit knowledge as the key to strategic alignment and intellectual capital development. Amidst the ongoing debate, it is important to recognise the advantages and limitations of each approach plus their suitability to different knowledge-related problems. The overlooked aspect is regarding how, in their own capacities, different knowledge types contribute to an organisation's knowledge stocks, such as intellectual capital and organisational performance, and therefore organisational value and

growth. In the subsequent sections, the relevance of different knowledge types in their respective capacities is discussed.

2.5.1.1 Tacit

Michael Polanyi's seminal works *Personal Knowledge* and *The Tacit Dimension* mounted two broad categories of knowledge explicated in extant literature – tacit knowledge and explicit knowledge. Tacit knowledge is highly personal, context-specific, subjective and can be represented in the form of metaphors, drawings, non-verbal communications and practical expertise (Alavi & Leidner, 2001; Smith, 2001). Shao, Wang and Feng state, 'It is usually difficult to articulate tacit knowledge through a formal use of language since it is expressed in the form of human actions such as evaluations, attitudes, points of view, commitments and motivation' (2015, p.593). Scholars have broadly categorised tacit knowledge into two dimensions: technical tacit and cognitive tacit, which are distinguished by the degree of tacitiness (Alavi & Leidner, 2001; Nonaka, 1991; Nonaka & Takeuchi, 1995; Smith, 2001). The degree of tacitiness is the level at which tacit knowledge is articulable for sharing among interacting individuals (Ambrosini & Bowman, 2001).

Technical tacit knowledge is an individual's personal skills and artisanship. Technical tacit knowledge evolves around one's practical knowledge that allows people to articulate such knowledge to an extent that makes it sharable. Cognitive tacit knowledge is an individual's beliefs, values and viewpoints, which are often expressed in the way an individual interprets their environment. Cognitive tacit knowledge emerges almost naturally and this makes it inarticulable and hard to share among individuals. Earlier studies (Nonaka, 1991, 1994; Nonaka & Konno, 1998; Nonaka & Takeuchi, 1995) emphasise that tacit knowledge is difficult to transfer and that face-to-face interaction may be the only means through which individuals will share such knowledge, although insufficiently. Later studies (Alavi & Leidner, 2001; Nonaka & Toyama, 2003; Nonaka, Toyama & Konno, 2000; Panahi et al., 2016; Panahi, Watson & Patridge, 2013; Von Krogh, Ichijo & Nonaka, 2000) show that some dimensions of tacit knowledge are articulable and therefore allow it to be transferred, for example through socialisation technologies such as social media (Figure -1).

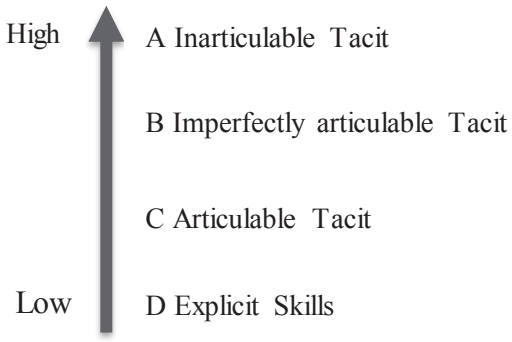


Figure 2-1: Degree of Tacitness (Ambrosini & Bowman 2001)

If they want to design systems sufficient for tacit knowledge-sharing, organisations should seek to understand tacit knowledge through nine perspectives: skill, cause-effect, cognitive, composite, cultural, unlearning, taboo, human and emotional (Dinur, 2011). However, managers should remember two things. First, the tacitness of these views of knowledge may vary between articulable, imperfectly articulable and inarticulable (Ambrosini & Bowman, 2001). Second, tacit knowledge, for example skills, can be articulable or imperfectly articulable when the right mechanism is applied (Ambrosini & Bowman, 2001). Tacit knowledge does not need to be converted to explicit knowledge but rather should be bracketed in new ways that allow it to be displayed and manifested through social interactions (Tsoukas, 2005). Consequently, the technology through which individuals share tacit knowledge, the approach or strategy to tacit knowledge-sharing and the degree of tacitness are important considerations for organisations (Joia & Lemos, 2010; Murray & Peyrefitte, 2007; Wu, Kao & Shih, 2010).

Table 2-3 summarises the degree of tacitness and the appropriate technology and sharing strategy for tacit knowledge in the organisation.

Table 2-3 The Degree of Tacit Knowledge in an Organisation

Tacitness	**Tacit dimensions**	**Examples**	**Media and strategy**
Articulable	-Technical -Skill -Cause-effect -Composite	-Best practices, -Lessons learned, -Know-how, -Values, -Ideas, -Crafts,	-Traditional IT, codification and information access -Social technology,

		-Charts and diagrams, -Rule of thumb, -Opinion, -Viewpoints, -Innovation, -Vision, -Hypotheses, -Process, -Perspective, -Tips, -Belief, -Tricks, -Routine, -Assumptions, -Stories, -Tricks, -Meaning, -Ideals, -Problem-solving.	personalisation and experimentation
Partly Articulable	-Cultural -Taboo -Unlearning -Human	-Expertise, -Show-how, -know-why, -Hands-on experience, -Tactical approaches, -Insight, -Hunches, -Emotions.	-Face-to-face interaction, personalisation, practice, experimentation and demonstration -Social technology and personalisation
Inarticulable	Cognitive Emotional	-Nuances, -Mental models, -Sensory skills, -Action,	-Face-to-face interaction, personalisation and observation

		-Intuition, -Schemata, -Gut feeling, -Intuition, -Paradigm, -Creativity.	

(Alavi & Leider, 2001; Dinur, 200; Panahi, et al., 2016)

2.5.1.2 Explicit

Explicit knowledge refers to structured and formalised instances of knowledge. It is knowledge that individuals can describe in formal language, print or electronic media, often based on established work processes, using a people-to-documents approach (Smith, 2001). Explicit knowledge is as important as tacit knowledge. It is therefore important for organisations to create a knowledge-sharing environment that supports employees in interacting with all forms of knowledge; as stated by Smith, 'Comparing tacit and explicit types of knowledge [as is done in this study] is a way to think, not point out differences' (2001, p.313).

Knowledge-sharing and creation begins with tacit knowledge through socialisation (Nonaka & Toyama, 2003). Ultimately, explicit knowledge is created through codification in databases and information retrieval systems (Smith, 2001). Nonaka and Toyama (2003) so that organisations will codify tacit knowledge to create explicit knowledge through the following processes: externalisation, which is the process of articulating tacit knowledge through dialogue and reflection; combination, which is the process of systemising and applying codified knowledge; and internalisation, which is the process of learning and acquiring new tacit knowledge in practice. Organisations in different cultural contexts should be aware that not all of the above explicit knowledge processes are efficiently applicable across all cultures (Easa & Fincham, 2012). It is therefore important that researchers and practitioners should consider the effect of culture on knowledge-sharing and creation processes and approaches (Easa & Fincham, 2012). This would inform the organisation into identifying, designing and implementing an appropriate knowledge-sharing system and environment sufficient to support both forms of knowledge in their particular context.

Organisations must think about mechanisms for explicit knowledge-sharing and tacit knowledge-sharing as well as the antecedents and the outcome associated with each knowledge

type. Since explicit knowledge is formal and systematic and can be achieved through reading project manuals and team discussions, then explicit knowledge-sharing comprises almost all the forms of knowledge-sharing that are institutionalised within organisations (Shao, Feng & Liu 2012; Shao, Wang & Feng 2015). Practices of explicit knowledge-sharing are more common in the workplace because explicit knowledge can be easily captured, codified and transmitted. Tacit knowledge, however, is difficult to express in verbal form. The key to tacit knowledge-sharing is the willingness and capacity of individuals to share what they know and to use what they learn (Holste & Fields, 2010). Human experience is the foundation of tacit knowledge-sharing because individuals cannot take advantage of new knowledge unless they have earlier social software already in place (Nonaka & Takeuchi, 1995). Difficulties that may constrain tacit knowledge-sharing include co-workers' unwillingness to share and/or use tacit knowledge, limited awareness of the tacit knowledge an individual possesses, difficulty in expressing tacit knowledge that is tied to mental and/or physical actions and deficiency in applying context-specific tacit knowledge in other contexts (Holste & Fields, 2010).

2.5.2 Knowledge-sharing Approaches

To design a sufficient knowledge-sharing environment, organisations must recognise two approaches for knowledge-sharing: codification and personalisation (Hansen, Nohria & Tierney, 1999), i.e., the commodity view of knowledge and the community view of knowledge respectively (McMahon, Lowe & Culley, 2004). Some studies (Dalkir, 2011; Helms, Cranefield & Reijsen, 2017; Huysman & De Wit, 2004) consider codification as the first wave of knowledge management, while personalisation is the second tendency of knowledge management. In fact, organisations should be particularly vigilant when deciding which strategy should be prioritised over the other because some scholars believe that knowledge management is evolving from focusing on codification rather than personalisation as a way to enable knowledge-sharing and management in an organisation (Helms, Cranefield & Reijsen, 2017). This is because codification is quite expensive and can fail to meet knowledge management goals due to infrastructure requirements and coping with the technology evolution (Alavi & Leidner, 1999). Secondly, focusing entirely on technology is not managing knowledge; rather, when we focus more on the people, processes and culture then we can manage and enable knowledge-sharing (Dalkir, 2011). The organisational environment will largely influence the choice of knowledge-sharing approach (Greiner, Böhmann & Krcmar, 2007).

2.5.2.1 Codification

Documentation of knowledge is imperative when considering the transferability of knowledge (Kogut & Zander, 1995). Knowledge codification is the process through which 'knowledge is carefully codified and stored in databases, where it can be accessed and used easily by anyone in the company' (Hansen, Nohria & Tierney, 1999, p.1). It is 'the process of conversion of knowledge into messages that can be processed as information' (Cowan & Foray, 1997, p.596), hence 'the process of transforming knowledge into information' (Prencipe & Tell, 2001, p.1375). This process aims to formalise knowledge into appropriate codes, structures or schemes. Adopting a codification approach implies that the core focus of the organisation is to collect and organise knowledge (McMahon, Lowe & Culley, 2004). This approach is recognised for reducing the costs of knowledge acquisition and improving the reliability of knowledge storage and recall (Cowan & Foray, 1997).

An organisation that considers their knowledge codification strategy will think of systems for capturing knowledge that consist of identifying the knowledge related to a specific ability: knowledge externalisation, which involves changing the nature of knowledge from tacit to explicit; and knowledge representation, which involves a description of the explicit knowledge with an appropriate set of information codes. Knowledge storage is also central to the knowledge codification approach (Hansen, Nohria & Tierney, 1999). Knowledge-storing is the process of saving knowledge within the organisation. It is at the heart of knowledge-mapping and can take the form either of knowledge databases, in which codified knowledge is stored in approximate information codes, or of yellow pages, which provide links to people with specific know-how. The idea here is that knowledge can be codified and made available to be retrieved electronically and the only information stored is that which is required for identifying the people and places where the knowledge resides.

According to McMahon, Lowe and Culley (2004), organisations that prioritise the codification of knowledge over the personalisation of knowledge will engage in certain processes. These are knowledge acquisition and structuring, which is the progressive process of capturing and encoding personal knowledge; knowledge organisation, which is the process of developing sufficient classification schemes to allow individuals to browse and locate knowledge resources; knowledge presentation, which is the process of building a domain of knowledge

into mechanisms for knowledge access or delivery; and information search and retrieval using information systems. Nonetheless:

> 'The selection and screening of relevant and irrelevant information is critical and it is vital to develop means of separating trivial transitory information from important intellectual assets. But even with screening of information, access within a collection will require information retrieval assistance for all but the smallest collection size.' (McMahon, Lowe & Culley, 2004, p.314)

On a number of occasions, it is considered unreasonable for individuals to deliver their knowledge, effort, time and experience where they could instead rely on other's past contribution of knowledge. This argument relates to knowledge that can be codified and documented rather than non-codified knowledge. Otherwise, knowledge may be held by one individual or embedded in a group of people (Alavi & Leidner, 2001). Shared knowledge at the group level can be utilised by organisations to achieve sustainable advantages. Firms have been introducing work groups in which individuals share their knowledge and experience in order to cope with complex tasks in the workplace. The main sources of knowledge, such as: expertise, information and feedback with customers, experts and others outside the work group may be distinguished regarding knowledge shared internally and externally to the work group. Therefore, knowledge-sharing plays a fundamental role in preventing organisations from reinventing the wheel.

2.5.2.2 Personalisation

Social constructivists suggest that knowledge is a social artefact produced through shared understandings emerging due to socialisation and interaction (Dalkir, 2011). Socialisation and interaction between individuals in an organisation are the premise of the personalisation approach. Personalisation is the person-to-person exchange and creation of knowledge, which Nonaka and Toyama (2003) refer to as socialisation. Personalisation develops a rich medium for communication, which is related to the use of people's contrivance for knowledge-sharing (Argote, 2013). Since individuals are considered the main carriers of knowledge, they are able to rearrange information in order to apply it in a new setting. The individuals are the custodians of knowledge and can transfer it to one another (Oliveira, 1999). That is why personalisation is considered as a knowledge-sharing mechanism that has the flexibility and tools to transfer

tacit knowledge and allow the discussion and the sharing of this knowledge in order to develop what is called "new knowledge" (Prencipe & Tell, 2001).

Personalisation is fundamentally a group of knowledge-creation approaches that requires the organisation to foster the creation of communities of practice and the use of collaborative systems (McMahon, Lowe & Culley, 2004). The use of enterprise social media, therefore, has an important role in supporting the personalisation approach. Communities of practice 'are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly' (Wenger, 2011, p.1). When people connect they constitute a community of members, which may take various forms including existing virtually or otherwise (Young, 2012). Such communities allow people to think together to create new knowledge (McDermott, 1999). Personalisation will involve the following processes: sharing knowledge, which is the interpersonal donation and collection of knowledge; and generating new knowledge through evaluating and combining knowledge (Argote, 2013). These processes will consequently support group learning (Argote, 2013).

However, personalisation can require costs and risks to both knowledge searchers and knowledge workers (Borgatti & Cross, 2003). For example, searching for information from individuals in any organisational setting may be hindered by ignorance because of topic dynamics (Menon & Pfeffer, 2003). Approval, reputation and/or self-image may constrain the approach (Borgatti & Cross, 2003). In addition to these, knowledge-sharing via personalisation can only take place when the knowledge searcher is aware of what others know, when they have the ability to access the knowledge worker, and the knowledge provider is willing to actively engage in knowledge-sharing with the knowledge searcher (Cross & Borgatti, 2000).

2.5.3 Knowledge-sharing Process

The shift of many countries from product-based economies into knowledge-based economies has accelerated the role of knowledge management in organisational effectiveness. The process of knowledge-sharing is explicated in extant literature as central in organisational intellectual capital development (Cabrilo & Dahms, 2018; Huang & Jim Wu, 2010; Kianto et al., 2014) and organisational learning (Argote, 2013). Knowledge-sharing is the activity of transferring knowledge in various forms of one person, group or organisation to another (McAdam et al., 2012). It is 'the process where individuals exchange their (tacit or explicit) knowledge and jointly create new knowledge in a knowing process within a social context that is also

constructed out of these activities' (Shuhua, 2008, p. 3). Knowledge-sharing is also described as the action undertaken by individuals to make knowledge available to others in a usable form (Ipe, 2003). Individuals engage in knowledge-sharing to distribute the 'right content to the right people at the right time' (Paloti, 2010, p.1). Achieving this goal involves two knowledge-sharing activities/processes: knowledge donation and collection (Van Den Hooff & De Ridder, 2004). Other studies (Ipe, 2003) describe these activities as knowledge distribution and knowledge acquisition respectively. Successful knowledge-sharing results in the joint ownership of knowledge between the sender and the receiver (Ipe, 2003). Knowledge-sharing is a voluntary act (Huysman & De Wit, 2004; Ipe, 2003) that leads to individual learning, group learning and organisational learning (Argote, 2013; Ipe, 2003). Sharing and making knowledge available to others is core in knowledge creation for organisational success (Nonaka, 1991; Paquette & Desouza, 2011; Tsoukas, 2005).

It is important to note that knowledge-sharing may happen voluntarily or involuntarily during interaction and communication processes among individuals, where activities of exchanging knowledge such as skills and experiences occur among individuals (Inkpen, 1996; Tsui, 2006). There are two actors involved: the contributor/donor who is an individual who contributes knowledge to the benefit of others through a shared media and the collector/seeker who is the other individual that collects or receives the existing knowledge. Consequently, the organisation must define mechanisms to support both of the knowledge-sharing processes: knowledge donation and knowledge collection (Van Den Hooff & De Ridder, 2004). The entire knowledge-sharing process fundamentally resides on two objectives: sharing for knowledge application and sharing for knowledge development (Hendriks, 1999). When the above objectives are achieved, then knowledge contribution and collection are recognised as support pillars for innovation and creativity (Lin, 2007b).

2.5.3.1 Knowledge Collection

Given the duality of the knowledge-sharing process (Dysvik, Buch & Kuvaas, 2015), collecting, seeking and receiving knowledge are core processes that must occur for knowledge donation to be relevant. We must remember that knowledge-sharing is 'a relational act based on a sender–receiver relationship that incorporates communicating one's knowledge to others as well as receiving others' knowledge' (Foss et al., 2009, p.873). Knowledge-sharing is also achieved through knowledge collection, which involves consulting others in order to access

their intellectual capital (Van Den Hooff & De Ridder, 2004). The knowledge collector accesses others' codified knowledge or narratives available on shared media. Knowledge collection involves activities like searching or locating knowledge repositories and knowledge contributors. It also involves efforts to connect and extract require knowledge from knowledge contributors linked on the same network. Knowledge seekers normally seek to address an immediate or future knowledge requirement to support a certain task.

There are some concerns that may inhibit knowledge collection in an organisation. The level of use of the available shared media (for example, information and communication technologies) may deter knowledge collection among some knowledge seekers (Tohidinia & Mosakhani, 2010). Knowledge collection encourages knowledge contribution but, like in the knowledge contribution process, if the level of commitment of members is doubtable it retards knowledge collection (Van den Hooff & de Leeuw van Weenen, 2004). The two processes are visibly important and must be seen to occur simultaneously for the realisation of knowledge-sharing, and possibly knowledge transfer. The most significant aspect is that instantaneous exchanges of messages as blocks of information result in knowledge-sharing that also implicitly leads to the creation of new knowledge. Therefore, knowledge-sharing within the organisation is very significant for learning new techniques, problem-solving, creating new competencies, initiating new undertakings and, most importantly, innovation, organisational performance and competitive advantage (Urbancova, 2013; Wang & Wang, 2012).

2.5.3.2 Knowledge Donation

Knowledge donation is the processes of 'communicating to others one's intellectual capital' (Van Den Hooff & De Ridder, 2004, p.118). It is also referred as knowledge contribution (Lin, 2007b; Van den Hooff & de Leeuw van Weenen, 2004; Van Den Hooff & De Ridder, 2004).The nature of knowledge donation in any organisational setting is a significant factor of knowledge management where knowledge is needed and can be used in the future. According to Huber (1991), organisations do not know what they know and usually have a weak system for locating and retrieving knowledge. During knowledge donation, the donors dedicate their valuable time to recording and posting their codified knowledge, skills and experiences on shared media for others to receive and reconstruct the knowledge to foster action. Therefore, communication processes and information flows are fundamentally a major driver for knowledge donation in organisations. As such, Krone, Jablin and Putname (1987) observe that

regardless of the specific theoretical perspective, communication systems contains the following components:

1. A sender that is the main source of knowledge (the knowledge donor);
2. A receiver, which carries out the message (the knowledge collector); and
3. A channel for coding and decoding the information (information system and collaborative systems).

Knowledge donation involves some aspects for consideration: observing the value of the source of knowledge; the willingness to share the knowledge; the strength of existing transmission channel; the willingness to acquire the knowledge from the source; and the capacity of receiving the knowledge and using it (Gupta & Govindarajan 2000). The last element, also considered the least controllable, is that knowledge should go through a recreation process in the mind of the receiver in order to improve the focal business process (El Sawy et al. 2001). This recreation process depends on the recipient's cognitive capacity for processing the incoming incentives of knowledge (Vance & Eynon 1998).

Organisations should recognise that the decision to contribute knowledge among employees is affected by one's perception of how their reputation is enhanced among others (Wasko & Faraj 2005). An individual must have a reason to share (Huysman & De Wit 2004), especially relating to approvability of value (Paquette & Desouza 2011). This reason may depend on social networks (Chai & Kim 2012; Wasko & Faraj 2005), ethical cultural concerns (Chai & Kim 2012), the level of commitment of members of the community (Van den Hooff & de Leeuw van Weenen 2004) and the level of use of the IT available (Tohidinia & Mosakhani 2010). Insufficient knowledge donation will affect subsequent knowledge collection (Dysvik, Buch & Kuvaas 2015).

2.5.4 Intellectual Capital

Knowledge is a preeminent resource for intellectual capital development, as intellectual capital is a resource for performance. It is therefore a prominent issue of consideration when an organisation seeks to enable knowledge for organisational success. However, one needs to understand the role of different aspects of the knowledge environment (knowledge-sharing types, knowledge-sharing approaches and knowledge-sharing processes) in order to understand and derive ways and systems for intellectual capital development and utilisation. In this section,

the various definitions of this concept and the way in which intellectual capital manifests in an organisation are discussed.

Intellectual capital is the combination of intangible assets available with an organisation that enable it to function (Brooking, 1996). It is 'the sum of everything everybody in a company knows that gives it a competitive edge' (Stewart & Ruckdeschel 1998, p.56) and the 'knowledge that can be converted into value' (Edvinsson & Malone, 1997, p.358). A more practical definition from a managerial perspective is provided by Chatzkel (2002, p.6), who states that it is 'the knowledge, applied experience, organisational technology, relationships, and professional skills that provide for a competitive edge in the market.' Intellectual capital will constitute things like processes, technology, employee skills and experience as well as the information about customers, suppliers and stakeholders that enhances the organisation's performance and competitiveness (Luthy, 1998; Stewart & Ruckdeschel, 1998). Intellectual capital creates value for an organisation (Chatzkel, 2002; Sardo & Serrasqueiro, 2017) and that is why it is 'the new wealth of organisations' (Stewart & Ruckdeschel, 1998). In other words, 'intellectual capital can make a company rich' (Lu, Wang & Kweh, 2014, p.65).

There are several dimensions of intellectual capital that originate from an accounting and audit context. According to Brooking (1996), cited in Luthy (1998), intellectual capital has four forms: market assets, intellectual property assets, human-centred assets and infrastructure assets. Market assets consist of such things as brands, customers, distribution channels and business collaborations. Intellectual property assets include patents, copyrights and trade secrets. Human-centred assets include education and work-related knowledge and competencies. Infrastructure assets include management processes, information technology systems, networking, and financial systems. Alternatively, Edvinsson and Malone (1997) and Chatzkel (2002) provide three forms of intellectual capital: human capital, structural capital and relational or customer capital. Human capital consists of the cumulative knowledge in the organisation, structural capital consists the supportive infrastructure for human capital and relational or customer capital consists of an organisation's relationships with stakeholders. This research conceptualises intellectual capital in three basic forms: human capital, structural capital and relational capital. These are discussed in the following sections.

2.5.4.1 Human Capital

Human capital is 'an organisation's combined human capability for solving business problems. [It] is inherent in people and cannot be owned by organisations' (Luthy, 1998). One may as well say it is 'the intelligence of the organisational members' (Bontis, 1998, p.65) or 'the cumulative knowledge of, skill, and experience of the organisation's employees or managers' (Chatzkel, 2002, p.10). Therefore, employee development and enabling knowledge-sharing in organisations are key drivers for the development of human capital and value creation for an organisation (Mayo, 2000). Organisations must carefully assess, evaluate and consider their human capital as an important aspect of intellectual capital because it is a powerful resource that supports innovation and strategic renewal (Bontis, 1998).

Bontis (1998) represents human capital as the combination of one's genetic inheritance, education and experience coupled with their attitude about life and business. Intellectual capital is therefore embedded in employees as the sum of their competence, knowledge, skills, innovativeness, attitude, commitment, wisdom and experience (Luthy, 1998). Tovstiga and Tulugurova (2009) offers a more precise conceptualisation of human capital, noting three aspects: competence, which consists of knowledge, skills and capabilities in the organisation; attitudinal aspects, which consists of the motivation, behaviour and mindset driving the organisation; and intellectual agility, which consists of the organisation's innovation, imitation and adaptation capabilities. With such blocks of human capital, the organisation has a stock of individual knowledge necessary to reach certain targets (Bontis, Crossan & Hulland, 2002; Curado & Bontis, 2007). The employees cannot take away intellectual capital when getting off work or leaving organisations. Human capital originates from processes such as brainstorming in a research lab, daydreaming at the office, process re-engineering, personnel development and skill improvement (Bontis, 1998).

Although there is growing evidence that proves a positive relationship between intellectual capital and firm performance, the role of intellectual capital towards organisational success is rarely considered in this discourse. There is evidence in the literature to suggest that human capital facilitates market performance (Dzenopoljac et al., 2017) as well as the financial performance of an organisation (Ozkan, Cakan & Kayacan, 2017). Human capital remains the most significant form of intellectual capital that facilitates or constrains a firm's intellectual capital performance in most industries (Bontis, Chua Chong Keow & Richardson, 2000; Ozkan, Cakan & Kayacan, 2017; Sardo & Serrasqueiro, 2017). In fact, organisations create value when they support the interaction between human capital and other forms of intellectual

capital through sufficient knowledge-management strategies (Kianto et al., 2014). Organisations must support both explicit and tacit knowledge-sharing to develop human capital (Wang, Wang & Liang, 2014).

2.5.4.2 Structural Capital

Structural capital is 'the mechanisms and structures of the organisation that can help support employees in their quest for optimum intellectual performance and therefore overall business performance' (Bontis, 1998, p.66). Chatzkel (2002, p.10) describes it as 'the embodiment, empowerment and supportive infrastructure of human capital. This form of intellectual capital is everything in an organisation that supports employees in their work … such as buildings, hardware, software, processes, patents, and trademarks.' The success of human capital developed by employees depends on the operative procedures and communication systems that support the activities of each employee (Bontis,1998). An organisation with strong structural capital will have a supportive culture that allows individuals to try things, to fail, to learn, and to try again, supporting the contribution that single employees can give to the company (Bontis,1998; Serrano Cinca, Mar Molinero & Bossi Queiroz, 2003). Structural capital allows human capital to develop and grow inside the company. Structural capital is represented by the knowledge contained in the procedures and the organisational routines used by the employee, consciously or not, during the carrying out of a task (Bontis, 1998; Edvinsson & Malone, 1997).

Structural capital is relatively broad when compared to other forms of capital. Organisations can develop structural capital by enabling three aspects of structural capital as a way to facilitate organisational performance : organisational capital, innovation capital and process capital (Chatzkel, 2002; Edvinsson & Malone, 1997). These dimensions can be explained as follows. Organisational capital consists of an organisation's investment in systems and systematised and codified competencies for leveraging the organisation's capabilities. Innovation capital consists of the organisation's innovative outcomes and its ability to renew and maintain these capabilities. Finally, process capital consists of the organisation's processes through which it creates and delivers value to its customers.

Isaac, Herremans and Kline (2009) state that organisations possessing organic structural environments will engage more frequently in creative renewal initiatives and have greater participative decision-making and higher levels of trust than those with mechanistic structures. Consequently, such organisations will possess more effective intellectual capital (Isaac,

Herremans & Kline, 2009). As such, structural capital is the most significant element of intellectual capital that supports overall business performance, irrespective of industry (Bontis, Chua Chong Keow & Richardson, 2000; Bontis, Janošević & Dženopoljac, 2015). For instance, while human capital is more important in fostering market performance, structural capital is of greater importance in enabling the earning and profitability of an organisation (Bontis, Janošević & Dženopoljac, 2015; Dzenopoljac et al., 2017). Organisations must be quite careful when managing their structural capital because this form of intellectual capital will affect the organisation's performance both in the short and long run (Sardo & Serrasqueiro, 2017). Among other factors, managing structural capital will require the organisation to create a supportive environment for both tacit and explicit knowledge exchanges (Wang, Wang & Liang, 2014).

2.5.4.3 Relational Capital

Relational capital, also known as customer capital, 'is the potential for capitalizing on good customer relationships as well as external business networks' (Bontis, Janošević & Dženopoljac 2015, p. 1367), with such business networks including relationships with clients, suppliers and partners (Bontis, Janošević & Dženopoljac, 2015). Accordingly, relational capital includes the knowledge of an organisation's marketing channels and customer relationships (Bontis, 1998) as well as industry and government associations (Chatzkel, 2002). It is important to note that relational capital is not just the business networks but also includes the strength and loyalty embedded in those networks (Luthy, 1998). Relational capital is built by a process of repeated exchange between the organisation and its external connections in order to generate new ideas, perspectives and feedback on products and/or services (Chatzkel, 2002). Relational capital will thus relate closely to attributes such as trust (Carey, Lawson & Krause, 2011; Isaac, Herremans & Kline, 2009). Trust is not only a basic component of relational capital but also a facilitator of collective action (Coleman, 1990).

An organisation can measure its relational capital by evaluating customer satisfaction, return purchases and price sensitivity (Luthy, 1998). In addition to this, organisations should analyse their network of partners, alliances, customers, suppliers and community as indicators of relational capital (Johnson, 1999; Tovstiga & Tulugurova, 2009). According to Johnson (1999), measuring an organisation's relational capital involves observing a number of quantitative and qualitative indicators. The quantitative indictors will include the number and

efficiency of relations or alliances while the qualitative indicators may include how these relations are valuable to both customers and the organisation. Although rarely explored by intellectual capital studies, there is evidence to suggest that the internal relationships within an organisation also constitute a significant element of relational capital (Inkinen, 2016a, 2016b; Johnson, 1999). Relational capital is core for building a positive reputation that will enhance an organisation's interactions with its customers, suppliers, partners and regulatory authorities such as the government (Johnson, 1999).

When an organisation develops its human capital, it creates sufficient grounds for the development and utilisation of relational capital (Ozkan, Cakan & Kayacan, 2017). Consequently, relational capital is the most significant form of intellectual capital that shapes the structural capital of organisations irrespective of their industry of operation (Bontis, Chua Chong Keow & Richardson, 2000; Liu, 2017), particularly organisational capital (Liu, 2017). Relational capital also influences organisations' human capital (Liu, 2017) and incremental innovation performance (Agostini, Nosella & Filippini, 2017). Organisations with high relational capital will operate more efficiently than those with relatively low relational capital, thereby improving the organisation's profitability (Dzenopoljac et al., 2017; Hussinki et al., 2017; Liu, 2017).

There is evidence that high intellectual capital is associated with operational efficiency and a firm's performance. This relationship may be mediated by an organisation's competitive advantage (Kamukama, Ahiauzu & Ntayi, 2011), where competitive advantage is also shaped by the organisation's intellectual capital (Daou, 2014). Some studies (Inkinen, 2016a, 2016b; Kianto et al., 2014; Sardo & Serrasqueiro, 2017; Wang, Wang & Liang, 2014) indicate that organisations' knowledge-management practices are the most crucial drivers in the development of intellectual capital. However, it is worth noting that the literature rarely elaborates on the different aspects of the knowledge-management practices of the organisation that facilitate the development of its intellectual capital.

2.6 Intellectual Capital and Knowledge Management

It is important to integrate intellectual capital management and knowledge management objectives and perspectives into a dynamic process in order to achieve organisational efficiency and success (Wiig, 1997). Organisations should know that intellectual capital is the stock of knowledge (the static aspect of knowledge) in the organisation, while knowledge management

is the flow of knowledge (the dynamic aspect of knowledge) (Chatzkel, 2002; Kianto et al., 2014). Consequently, practitioners and researchers may have to consider that the relationship between intellectual capital and knowledge management is reciprocal. All three forms of intellectual capital conflate to influence knowledge processes (Zaei & Kapil, 2016) and increase knowledge productivity in organisations (Huang & Jim Wu, 2010). Conversely, efficient knowledge management practices are key in the development and strategic alignment of intellectual capital (Cabrilo & Dahms, 2018; Kianto et al., 2014). Managing intellectual capital is a strategy for value growth (Kianto et al., 2014).

Knowledge dynamics reside at the centre of organisational value creation capacity. They underpin the development of organisational capabilities and competencies. It is through knowledge transformation, development, upgrading and protection that organisations renew and create new capabilities that allow them to fit in with the business ecosystem. Knowledge provides various competitive advantages but, as the business environment evolves, knowledge resources can become obsolete. Therefore, learning new organisational and knowledge management practices are fundamental for regenerating and growing organisational knowledge domains so that organisations keep and/or acquire sustainable competitive advantages. Although the relevance of knowledge and of the knowledge processes for their maintenance have been extensively investigated in the strategic organisational and management literature, the understanding of the foundations of knowledge dynamics still requires more investigation. The knowledge management practices and intellectual capital development of an organisation may not only have direct or indirect effects on organisational performance measures but also may affect each other (Inkinen, 2016a; Kianto et al., 2014; Wang, Wang & Liang, 2014). The relationship between knowledge management practices and intellectual capital can be presented in four scenarios. In scenario one, knowledge management directly affects intellectual capital (Hussinki et al., 2017; Inkinen, 2016a). In scenario two, intellectual capital directly affects knowledge management (Inkinen, 2016a; Obeidat et al., 2017; Zaei & Kapil, 2016). In scenario three, knowledge management mediates and/or moderates the relationship between intellectual capital and performance measures (Cabrilo & Dahms, 2018; Inkinen, 2016a; Kianto et al., 2014). Finally, in scenario four, intellectual capital mediates and/or moderates the relationship between knowledge management and performance measures (Inkinen, 2016a; Kianto et al., 2014; Wang, Wang & Liang, 2014). Given that an organisation's knowledge environment constitutes both its knowledge management practices and its

intellectual capital, organisations need to consider that the organisation's knowledge environment (i.e. its knowledge management practices and intellectual capital) is a mechanism behind the effect of organisational culture on organisational success.

2.7 Organisational Success

Organisational success relates to an organisation's satisfaction with its business and strategic outcomes or the benefits that arise from its operations (Badewi, 2016; McLeod, Doolin & MacDonell, 2012). Intellectual capital, knowledge management and organisational culture are interlinked phenomena that play vital roles in enhancing measures of organisational performance such as innovation, productivity and output. These three constructs are essential components of a smooth process of evolution, which continues in almost all organisations. All of these components are necessary for any organisation to the extent that a company that insufficiently addresses any of the three constructs may jeopardise its ability to achieve success. Fiscal evaluation is one conventional method used to gauge the performance of an organisation. However, the knowledge management performance is mostly gauged through universal yield methods such as market allocation, profitability, development/expansion rate, innovation and the dimension of business in contrast with key rivals.

Organisational culture acts as a medium between manifestation and intellectual capital. Knowledge-sharing and management practices allow organisations to process information in a manner that enables employees to share with all concerned and make information readily available for future referencing. It is considered a managerial tool that helps in decision-making and formulating business strategies (KMT, 2015). A successful and renowned organisation yields better financial returns and has a better reputation than an unsuccessful organisation, which determines the competitive advantage of the organisation.

2.7.1 Operational Performance

In the era of knowledge-based economies, intangible resources and competencies are crucial for firms to survive in dynamic environments (Subramaniam & Youndt, 2005; Teece, Pisano & Shuen, 1997). According to the knowledge-based view (KBV), knowledge-related resources are more likely to contribute to a firm attaining and sustaining superior performance than tangible resources (Bogner & Bansal, 2007). Since knowledge is not commonly distributed within organisations, knowledge-sharing among individuals, teams and/or units is a practice

that organisations can use to identify, capture, create and accumulate their knowledge in order to facilitate resource structuring and capacity-building, both of which have been found to significantly increase firms' operational performance (Wang & Wang, 2012).

In general, knowledge-sharing can be regarded as the process of interaction, communication and coordination of knowledge or expertise (Haas & Hansen, 2007). It comprises a set of shared understandings related to providing employees with access to relevant information and using existing knowledge within organisations (Lin, 2007a). Knowledge-related competence and organisational performance can be enhanced by effective knowledge-sharing because knowledge-sharing can make jobs easier and improve process efficiency through the exchange of relevant information, best practices, insights, experiences, preferences and lessons learned as well as common and uncommon sense (Huang & Jim Wu, 2010; Wang & Wang, 2012). Since most explicit knowledge and certain tacit knowledge can be retained by an organisation for value creation and value extraction, it is knowledge-sharing or integration that combines scattered knowledge to enhance innovation, creativity and ultimately achieve performance (Gao, Li & Clarke, 2008).

2.7.2 Financial Performance

The exchange of explicit knowledge within an organisation can bring knowledge resources together to drive financial performance. The high level of expertise in knowledge-sharing helps organisations take advantage of existing formal knowledge and expertise in integrated problem-solving, which can improve products and processes (Lawson et al., 2009). For example, Lee (2001a) found that when successful explicit knowledge-sharing takes place directly in outsourcing projects, firms' financial outcomes are enhanced. Carr and Kaynak (2007) suggest that information-sharing within an organisation and between organisations will help the organisation's members identify critical problems, which leads to better product quality improvement and financial performance. Wang and Wang (2012) confirm that explicit knowledge-sharing practices facilitate innovation and financial performance.

Tacit knowledge is an essential part of the experiential knowledge acquired by individuals during the course of holistic working. Tacit knowledge-sharing contains person, situation or context-oriented interactions. This practice stimulates an organisation's members, groups and units to exchange their own experiences or knowledge and think together and can bring enormous benefits to an organisation (Down, 2001; Matthew & Sternberg, 2009; van Woerkom

& Sanders, 2010). These benefits include lower costs, improved delivery, fewer quality problems, early insights into new technologies and on-time product launches (Hsu, 2008; Sher & Lee, 2004). Law and Ngai (2008) found that tacit knowledge-sharing led to the improvement of the business processes, products and service offerings of a firm as well as better operational performance.

2.8 Chapter Summary

This chapter reviewed the literature on two significant factors fostering organisational operations and performance: knowledge management and intellectual capital. A number of areas for future research beyond this study have been identified. This literature review has identified a gap in the knowledge regarding these main factors. Therefore, this study integrates the knowledge management practices of an organisation with its intellectual capital to offer a comprehensive view of the knowledge environment of an organisation. The review also provided notes that link Saudi Arabia national culture, organisational culture and the knowledge processes of organisations. The review generates a set of organisational culture indicators that may be closely associated with an organisation's knowledge-sharing environment. These indicators include interpersonal trust, communication and technology support and are derived from the literature and previous studies.

The knowledge environment of an organisation is constituted of two core dimensions, each of which has three sub-dimensions. The first core dimension is the knowledge practices of an organisation, which has the following sub-dimensions: types of knowledge shared, knowledge-sharing approaches, and knowledge-sharing processes. The second core dimension is the intellectual capital of the organisation, which has the following sub-dimensions: human capital, structural capital and relational capital. The knowledge environment of an organisation is the knowledge practices of an organisation (the flow of knowledge) and its intellectual capital (the stocks of knowledge in the organisation), both of which contribute to organisational success.

This study argues that organisation's knowledge environment, as described in this chapter, mediates the effect of organisational culture on organisational success. The literature shows that organisational culture can be defined by looking at organisational factors such as interpersonal trust among employees, communication within the organisation and IT support for knowledge-sharing. Trust and communication are social factors, which not only drive employee performance but also contribute to organisational performance. IT support, on the

other hand, is a technical factor identified in relation to knowledge management in the organisation. A great deal of existing literature on organisational performance and knowledge management treat organisational culture as an entirely social construct. Existing literature rarely discusses organisational culture from a socio-technical perspective. This study recognises that the current evolution of technology and the social and technical aspects of organisational management are closely intertwined and we may not be able to completely extract the social roles from the technical roles. Therefore, this study examines organisational culture as a socio-technical factor that fosters organisational success through its mediating role in the organisation's knowledge environment. The following chapter, Chapter 3, describes the model development and research methods of the study.

Chapter 3: Theoretical Background and Hypothesis Development

3.1 Objective and Structure Development

The previous chapter, Chapter 2, reviewed the literature on organisational culture factors (interpersonal trust, communication and technology support) and their impact on the knowledge environment factors (knowledge-sharing practices and intellectual capital) as well as organisational success. This chapter draws from the literature review to develop the research model, research questions and hypothesis. Frequently cited theoretical models and frameworks on organisational culture, knowledge-sharing, intellectual capital and organisational success will be investigated and evaluated, while other related models are examined. Finally, the relevant constructs are identified and the justification of their selection for the current study's research model are provided. The research questions are defined before the research model is proposed based on the literature review presented in the previous chapter.

This chapter explains in detail the research methodology engaged in this study in coordination with the research questions and the developed hypothesis. Section 3.2 discusses existing research models and provides a foundation for the model developed in this research. Section 3.3 provides further information on the research model. Section 3.4 explains theoretical background and research model development and Section 3.5 presents the hypothesis development of the research model. Section 3.6 explains the significance and contribution of this research then Section 3.7 summarises the chapter.

3.2 Theoretical Development

In this section, all of the models related to the organisational culture factors and knowledge-sharing perspective in relation to the success of organisations from a performance standpoint are reviewed. Although each model is discussed independently, some common factors and elements are considered to help consolidate the relationships among the constructs of the researcher's model. Consequently, a validation model is used to ensure there is an existing relationship between the selected variables for organisational culture, knowledge environment and organisational success. In addition to this, examining these models supports the achievement of the study's aims and objectives by allowing the study to focus on the relationships between the constructs. Although some of these constructs in organisational culture were not significant in previous studies, they may demonstrate some significance in this study when the knowledge environment factors of both knowledge-sharing practices and

intellectual capital are used to enhance the performance of organisational success as measured through financial and operational performance.

3.2.1 A Research Framework for the Effect of Human Capital Investment on Organisational Performance

Since trust is one of the most significant tools within the organisational culture discussed in (Section 2.3.1), it mainly deals with the reality of social aspects within the firm. Therefore, expediting interpersonal trust as one of the major sub-factors of organisational culture is very useful for motivating an organisations managers and employees to work together to communicate, exchange knowledge and enhance the firm's organisational performance.

Wang, Shieh and Wang (2008) developed a research framework to investigate the relationship between human capital investment and organisational performance, between human capital investment and organisational culture, between organisational culture and organisational performance and, finally, the effect of organisational culture on the relationship between human capital investment and organisational performance (Figure 3-1). Their study focused on several key aspects of organisational performance identified by Hamel and Skarzynski (2001): organisational leadership, internal trust relations and interpersonal relationships within the organisations.

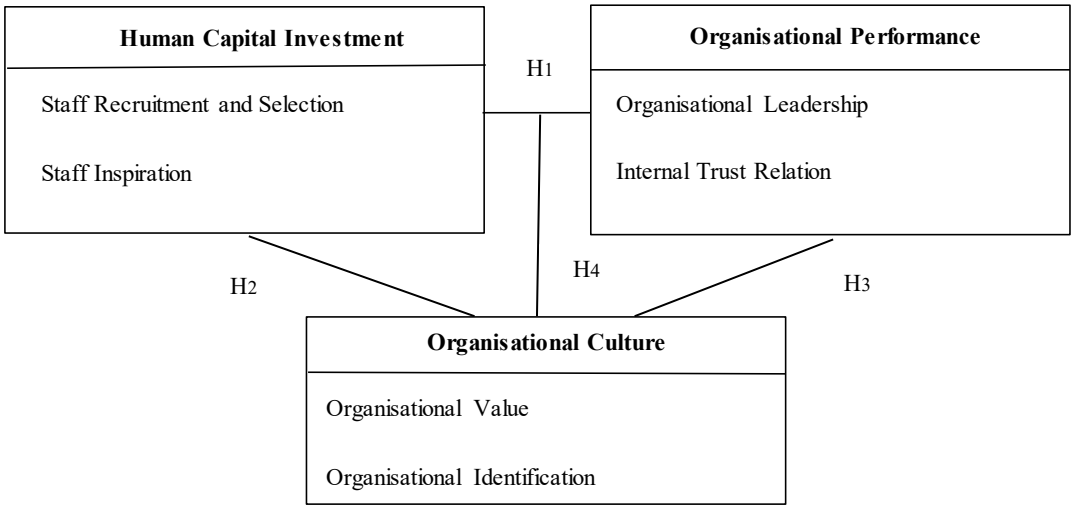


Figure 3-1 Effect of Human Capital Investment on Organisational Performance Research Framework

According to Li (2005), internal trust relations are an essential component that is considered intangible and is related to understanding interpersonal and group behaviour, managerial effectiveness, economic exchange, and social and political stability. Chen (1998) states that internal trust is one of the most significant factors for helping employees cope within the working environment. However, Brammer (2000) argues that because interpersonal relationships involve the interaction of people, interpersonal trust should be considered a dynamic process of social influence. In any organisation, the interpersonal relations influence aspects of organisational performance such as the organisational environment, employee participation and mental construct. How people get together and how they feel about work in a good organisational environment can improve their job satisfaction and productivity and decrease turnover (Lu et al., 2002). Therefore, in this research interpersonal trust as the main organisational culture factor within the research model is significant for the sake of knowledge-sharing and organisational success performance.

3.2.2 A Model for Examining the Effect of Using the Socio-Technical Factors of Organisational Intention to Encourage Knowledge-sharing

In order for socio-technical factors to be adapted for the organisations encouragement of knowledge-sharing, it is necessary to first identify the tools for knowledge-sharing. Therefore, technology support, which is nominated as the third sub-factor of organisational culture (explained previously in Section 2.3.1) is considered the main tool for transferring knowledge

within the organisation. This is particularly for this research, which focuses specifically on Saudi Arabia's IT firms.

The illustrated model shown in Figure 3-2 was developed by Lin and Lee (2006) to examine how two main socio-technical factors – organisational climate and IT support – affect employees' intention to share knowledge through the effects of three main innovative characteristics: perceived relative advantage, perceived compatibility and perceived complexity. Since organisational innovation is considered a significant approach to comprehend social and technical issues, they are both equally important to facilitate innovation. For example, the combination of organisational resources and IT support creates a greater capacity for a firm's innovation (Rycroft & Kash, 2002). Dewett and Jones (2001) also consider an organisation's characteristics and IT support to both plays a fundamental role in influencing organisational variation, innovation and knowledge-sharing capacities.

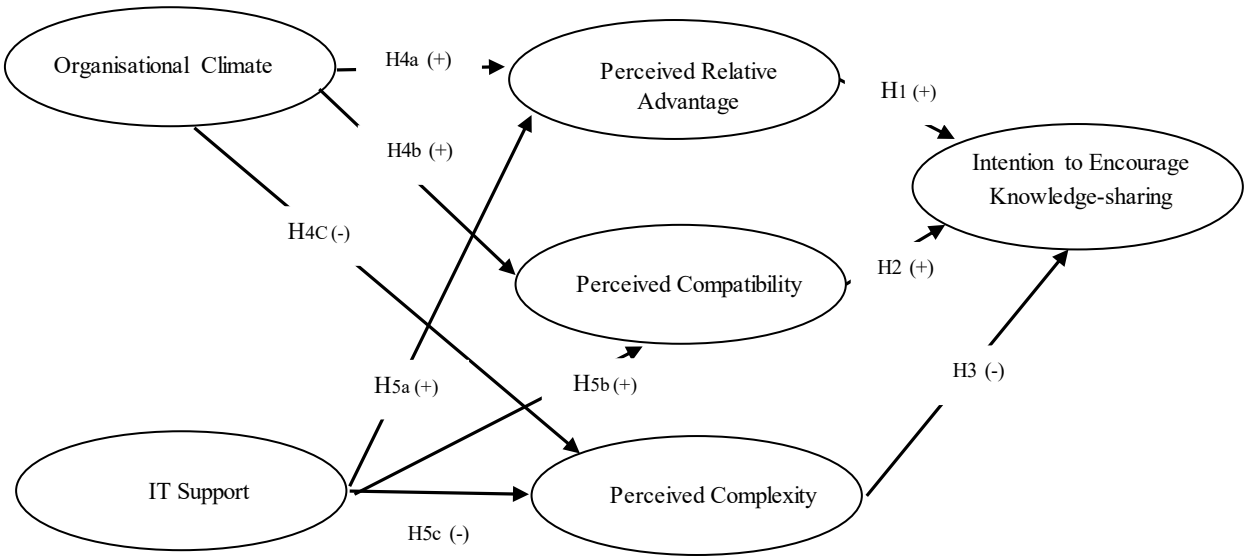


Figure 3-2 Effect of Socio-Technical Factors on Organisational Intention to Encourage Knowledge-Sharing Conceptual Model

In Lin and Lee's (2006) study, IT support did not significantly affect the three innovation characteristics of knowledge-sharing. The limitation of the study is that it focused on the examination of the perceptions of top managers regarding knowledge-sharing because it only looked at one factor of knowledge-sharing. Therefore, a similar study should be developed that can predict and explain how organisational factors can encourage knowledge-sharing through

employees' IT support. Lin and Lee's (2006) study suggests that organisations should make an effort to allow employees to suggest new opportunities and improve the organisation's social interaction culture before introducing knowledge-sharing initiatives. In addition to this, creating an organisational culture that not only provides IT support but also builds up significant communication incentives for developing new ideas and responding rapidly to new opportunities will result in better interaction between employees and top management that will drive knowledge-sharing intentions. Finally, the sociocultural factors become factors that support the organisation, evaluate the perception of employees and encourage knowledge-sharing within the organisational culture.

3.2.3 A Research Framework for Intellectual Capital and Knowledge-sharing: The Mediating Role of Organisational Knowledge-Sharing Climate

The development of the knowledge environment (explained in Section 2.5) combines two of the major factors of this research study: knowledge-sharing aspects and intellectual capital factors. This is because the flow of knowledge has to anticipate with the intellectual capital properties in order to maintain a well-established knowledge environment.

Radaelli et al. (2011) developed a research framework that focuses on the knowledge-sharing behaviour of different elements within organisations (Figure 3-3). Specifically, the framework explores the effect of intellectual capital on a practitioner's knowledge-sharing behaviour and the use of organisational knowledge-sharing climate as a mediator.

The overall framework assumes that intellectual capital both affects individual's knowledge-sharing activities through the organisational knowledge-sharing climate and presents a commitment through intra-organisational sharing of knowledge. Bowen and Ostroff (2004) claim that a significant effect is applied in the case of intellectual capital. In this framework, individuals form a shared understanding regarding the organisation's commitment to developing a knowledge-sharing climate by drawing conclusions from the strength of the intellectual capital dimensions. In other words, the organisation's knowledge-sharing climate is expected to influence an individual's knowledge-sharing by affecting the conditions that determine the activity (Coleman, 1990). Therefore, in this research, the knowledge environment is a significant aspect of the research model that contains both knowledge-sharing elements and intellectual capital factors that contribute to the organisation's successful performance outcome.

Figure 3-3 Intellectual Capital and Knowledge-sharing: The Mediating Role of Organisational Knowledge-Sharing Climate Research Framework

3.2.4 A Model for Knowledge-Sharing, Absorptive Capacity and Innovation Capability: An Empirical Study of Taiwan's Knowledge-Intensive Industries

The knowledge-sharing process is the third factor within the knowledge environment developed in the study. In order to donate knowledge, one must first collect knowledge within the organisation (discussed further in Section 2.8).

The conceptual framework illustrated in Figure 3-4 was developed and tested by Liao, Fei and Chen (2007). It was designed to investigate the relationship between knowledge-sharing, innovative capability and absorptive capacity in Taiwan's knowledge-intensive industries. The study discovered that absorptive capacity is the intervening factor between knowledge-sharing and innovation capability. Additionally, the study found there was a positive effect on absorptive capacity and mediating model exhibits from both model generalisation and extension characteristics through many model comparisons in the population sampled from various industries. Moreover, the research model found that the knowledge-sharing factors (both collection and donation) were part of the knowledge-sharing process factors.

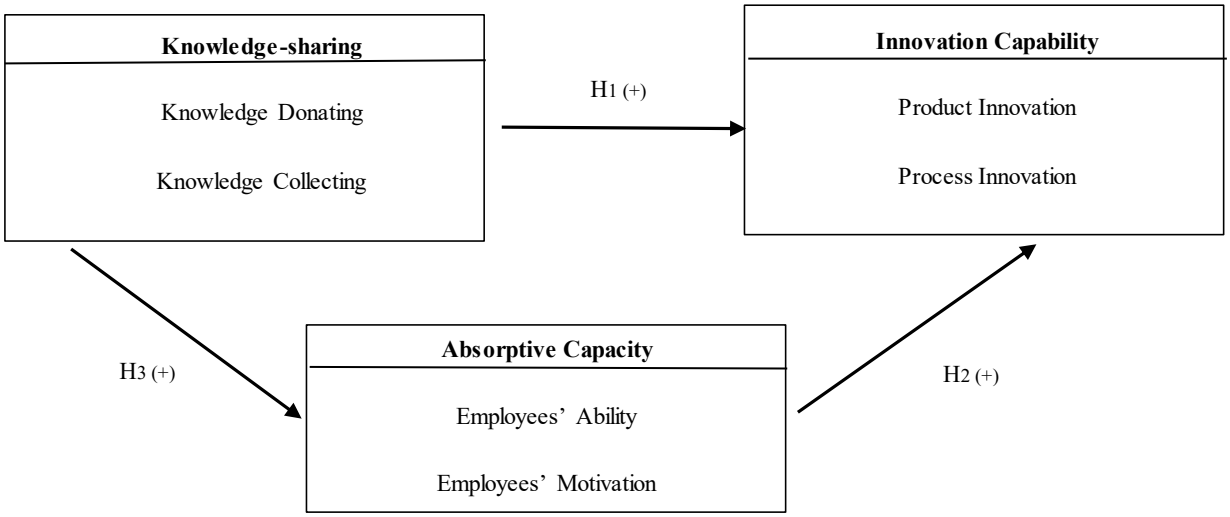


Figure 3-4 Knowledge-Sharing, Absorptive Capacity and Innovation Capability in Taiwan's Knowledge-Intensive Industries Conceptual Framework

3.2.5 A Research Model for How the Knowledge Map Fit and Personalisation Affect the Success of Knowledge Management Systems in High-Tech Firms

In order to achieve organisational success, firms must personalise the firm's tools in order to help motivate managers and employees and to ease the approach of knowledge-transfer. Therefore, personalisation is considered one of the major sub-factors of knowledge-sharing approaches (explained in Section 2.7.2).

The research model shown in Figure 3-5 was designed by Lai, Wang and Chou (2009). It shows the shift of a product-based economy to a knowledge-based economy through the high number of organisations implementing knowledge management systems (KMS). The success factors of KMS have been empirically examined by previous research, in particular to fit the personalisation influence of employees' satisfaction with KMS as a substitute measure for success and effectiveness in information systems organisations. According to Lai, Wang and Chou (2009), the higher the level of knowledge map to fit and personalisation, the greater satisfaction employees will achieve through the mediation effects of increased perceptions of ease of use and usefulness of KMS. The model developed for this research draws from Lai, Wang and Chou's model the personalisation factor that is part of a knowledge-sharing approach and is used as a measurement output of an organisation's success.

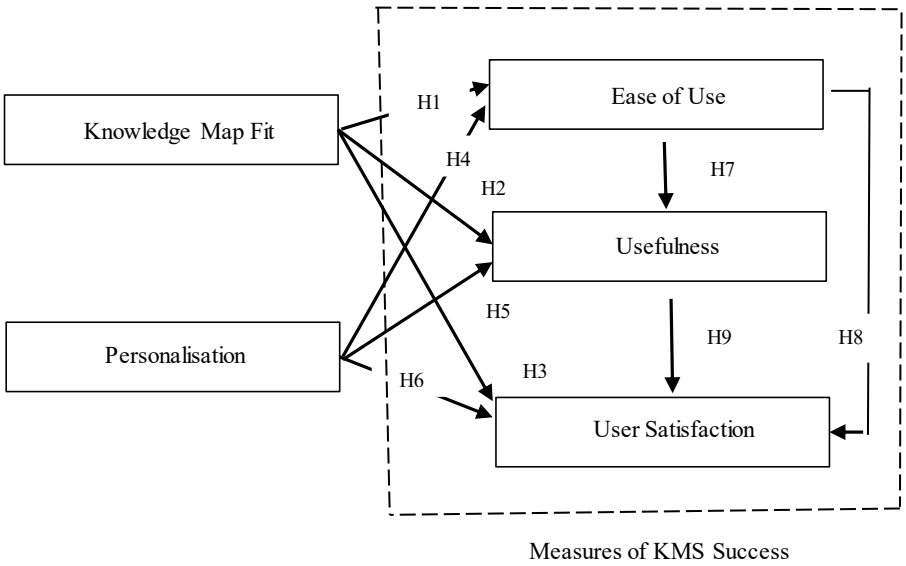


Figure 3-5 How Knowledge Map Fit and Personalisation Affect the Success of KMS in High-Tech Firms Research Model

3.2.6 A Research Model for the Impact of Knowledge-sharing, Organisational Capability and Partnership Quality on Information Systems Outsourcing Success

The output of the study measures organisational success by examining the knowledge-sharing types of both explicit and tacit knowledge, which is the first factor within the knowledge environment. The organisational success factor is explained in detail in Section 2.10.

There has been much research conducted on how knowledge-sharing and outsourcing success affect information systems (IS). Figure 3-6 shows a research model developed by Lee (2001) that studies the relationship between knowledge-sharing type and outsourcing success through using the service receiver to absorb the needed knowledge and build up a partnership with organisations. Therefore, identifying organisational success as an outcome and measuring it through financial and operational performance is used in this study to measure organisational success.

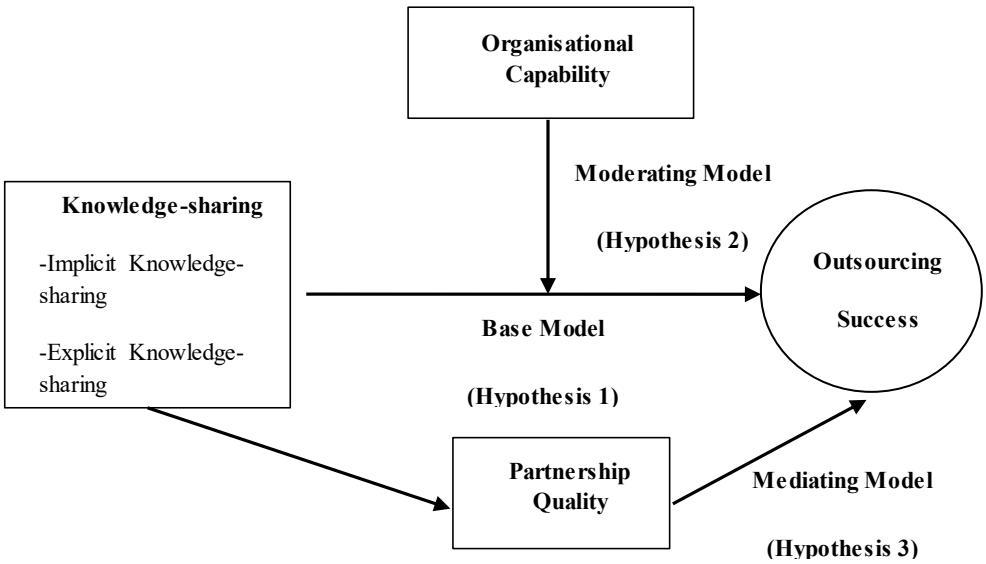


Figure 3-6 The Impact of Knowledge-sharing, Organisational Capability and Partnership Quality on Information Systems Outsourcing Success Research Model

3.2.7 A Research Model for Knowledge-sharing, Intellectual Capital and Firm Performance

In order to maintain an organisation's knowledge-sharing practices and intellectual capital, one must create an environment of knowledge in order to consider the interaction of factors with each other. Combining the factors of knowledge-sharing and intellectual capital was discussed in Section 2.5.

The aim of this research model developed by Wang, Wang and Liang (2014) and shown in Figure 3-7 is to investigate the impact of knowledge-sharing on a firm's performance through facilitating the role of intellectual capital. Starting from the right side of the research model, there are two main factors of knowledge-sharing measured: first, tacit knowledge, which contributes to all of the intellectual capital factors (human capital, structural capital and relational capital); and second, explicit knowledge-sharing, which contributes to two factors of intellectual capital (human capital and relational capital). The intellectual capital factors (human, structural and relational capital) all enhance the operational and financial performance of the firm. The effect of knowledge-sharing (both tacit and explicit) on the firm is performed through the intellectual capital factors. Finally, explicit knowledge-sharing has a greater impact on financial performance than operational performance but tacit knowledge-sharing has a

greater impact on operational performance than financial performance. Therefore, in this study's research model, tacit and explicit knowledge-sharing are identified as types, intellectual capital is categorised into its three main factors (human capital, structural capital and relational capital) and their effect on the success of the firm is due to their impact on the two main factors of operational and financial performance.

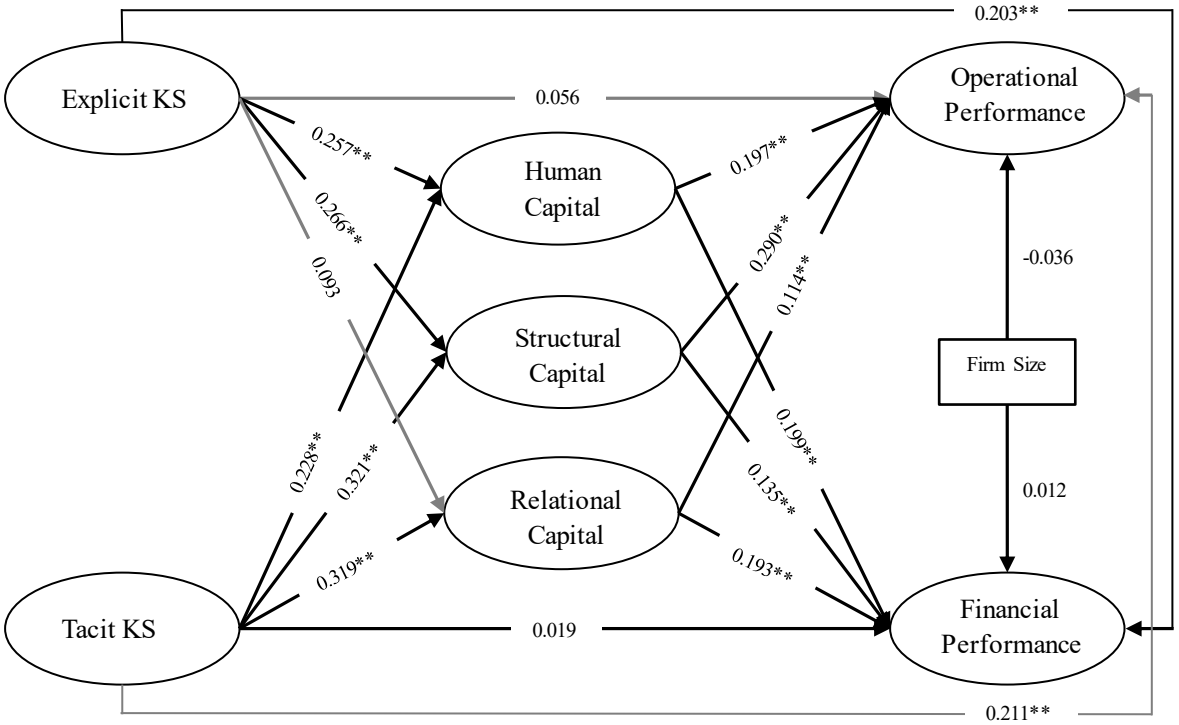


Figure 3-7 Knowledge-sharing, Intellectual Capital and Firm Performance Research Model

3.3 Research Model

A research model was developed on this research in order to answer the research questions. The proposed model is comprised of three main constructs (Figure 3-8):

1. Organisational culture (OC)
2. Knowledge environment (KE)
   a. Knowledge-sharing (KS)
   b. Intellectual capital (IC)
3. Organisational success (OS)

Each of these constructs are briefly explained below.

The first construct, organisational culture, consists of three main factors that helps in knowledge-sharing within the organisation:

- **Interpersonal trust (T):** Refers to the level of trust between co-worker's and the degree of their willingness to share knowledge and information between each other within the organisation.
- **Communication (C):** How employees and managers within the organisation use communication tools in order to exchange knowledge, feedback and ideas that help in decision-making.
- **Technology support (TS):** This involves the tools within the organisation through which it helps in knowledge-sharing/transfer.

The second construct, the knowledge environment, consists of two main constructs which are correlated to one another: knowledge-sharing and intellectual capital. Knowledge-sharing contains three main factors:

- **Knowledge-sharing types (KST):** Refers to both tacit knowledge, which is documented in a written form within the organisation, and explicit knowledge, which is intangible knowledge that is hard to capture and document.
- **Knowledge-sharing approaches (KSA):** Refers to both the codification of knowledge and documenting it for the sake of preventing knowledge loss and then capturing it to personalise it according to the organisation's needs.
- **Knowledge-sharing process (KSP):** Refers to the way in which individuals use communication and their personal intellectual capital to donate knowledge where others are collecting the knowledge donated within the organisation.

Intellectual capital also contains three main factors:

- **Human capital (HC):** Refers to the employees' knowledge, skills, innovativeness, attitude, commitment, wisdom and experience.
- **Structural capital (SC):** Describes the valuable strategic assets of organisational capabilities, organisational culture, routines and procedures.
- **Relational capital (RC):** The knowledge and learning capabilities that exist in relationships between an organisation and its external stakeholders.

The outcome of the research model is the organisation's success which is evaluated through two main factors:

- **Operational performance (OP):** Refers to customer satisfaction, cost management and the productivity of the company.
- **Financial performance (FP):** Refers to the organisation's annual growth and profits.

3.4 Theoretical Background and Research Model Development

The rationale of this study is to explicitly identify and gauge the influence of organisational culture and knowledge environment on organisational success. This section provides the theoretical foundation of the proposed research model and describes each factor studied. Hypotheses are then developed and then a research model is developed from the theoretical foundation, including existing models related to organisational culture and knowledge-sharing towards organisational success, in order to test the hypotheses. Figure 3-8 shows the research model and Table 3-1 presents the definition of each factor.

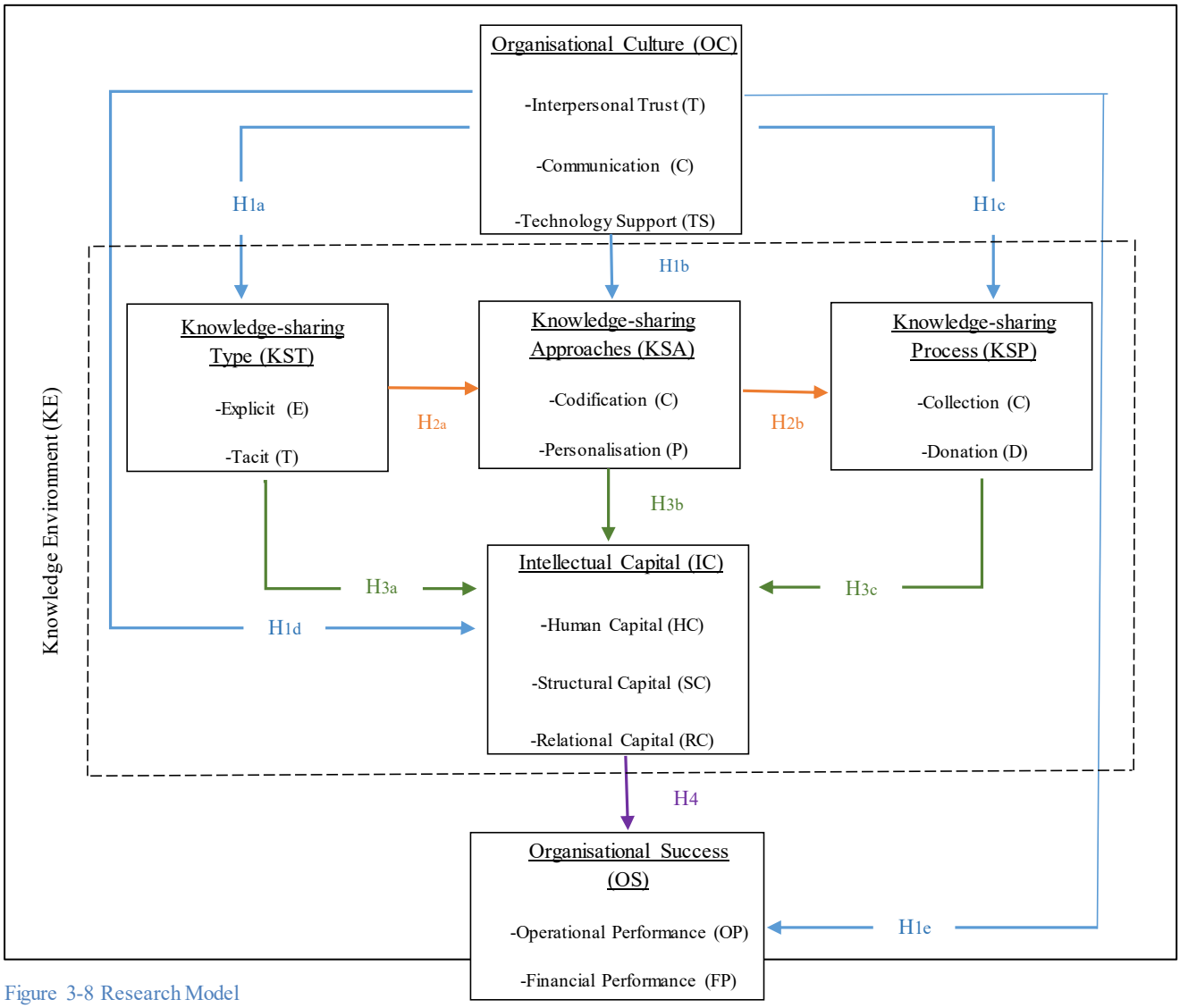


Figure 3-8 Research Model

Organisational culture forms the core of the procedural and technical process that leads to achieving the organisation's desired objectives and goals. In order to develop an IT environment adequate for enabling its knowledge management practices and the consumption of intellectual capital. IT support is an enabler for task organisation and innovation for improved team performance (Quink, 2008). The procurement and sharing of knowledge coupled with intellectual capital forms the foundation on which the complete system works. Refined knowledge helps more in decision-making than raw data (Al-Adaileh & Al-Atawi, 2011). The processing of this raw data or information and its dissemination to the concerned parties after desired processing is of utmost importance when attempting to achieve a set of dividends (Bridges, 2009). Based on this knowledge, organisations must make structural and procedural changes to achieve the best possible combination that ensures the highest yields. Therefore, the relationship between organisational culture, knowledge-sharing and intellectual capital is very intricate and necessary to explore because the lack of a single element can jeopardise the harmony of the entire organisation (Finney, 2012).

Previous research has proposed different frameworks of intellectual capital, which has three major components: human capital, structural capital and relational capital (Wang, Wang & Liang, 2014). The knowledge-sharing process consists of two dimensions: knowledge donating and knowledge collection (Lin, 2007; Van den Hooff & de Leeuw van Weenen, 2004). Hansen, Nohria and Tierney (1999) argue that knowledge-intensive organisations should pursue either codification or personalisation as a dominant strategy. Hansen, Nohria and Tierney's (1999) concept of codification and personalisation is widely cited in the literature on knowledge formulation. They conceive of it as the process by which employees mutually transfer and create knowledge. These factors include acceptance of change, innovation, trust, communication, collaboration, IT support and teamwork. Organisational culture is correlated with factors like types, processes and procedures of sharing knowledge to understand their main impact on knowledge formulation (Wang, Wang & Liang, 2014).

The development of the research model shown in Figure 3-8 illustrated the significance and connectivity of the factors to each other based on the literature review in Chapter 2 and Table 3-1, which clearly defined each main and sub-factor of the research model and its main source of study.

Table 3-1 Factors Description

Factor	Description	Source
Organisational culture (OC)	Schein defines organisational culture as the characterised attitudes, beliefs, experiences and values of people in a given organisation. **Interpersonal trust** refers to '"co-workers having a good level of faith in each other in terms of intentions and behaviors.'" **Communication** "refers to 'human interaction through oral conversations and the use of body language while communicating". **Technology support** refers to the '"level to which facilitating knowledge-sharing through information technology use.'"	Al-Alawi, Al-Marzooqi and Mohammed (2007); Schein (2004, 2010)
Knowledge-sharing types (KST)	**Explicit knowledge** is knowledge that can exist in symbolic or written forms. **Tacit knowledge** is often context dependent and personal in nature. It is hard to communicate and deeply rooted in action, commitment and involvement	Nonaka (1994)
Knowledge-sharing approaches (KSA)	**Codification:** Knowledge is captured and stored in electronic repositories/databases and is independent to the individuals who generates knowledge. **Personalisation:** Knowledge shared through person-to-person interaction or through some communication channel.	Hansen, Nohria and Tierney (1999)
Knowledge-sharing process (KSP)	**Knowledge donating** is defined as '"the process of individuals communicating their personal intellectual capital to others'" **Knowledge collecting** is defined as the '"process of consulting colleagues to encourage them to share their intellectual capital'"	Lin, (2007); Van den Hooff and de Leeuw van Weenen, (2004)
Intellectual capital (IC)	**Intellectual capital** '"is the sum of all knowledge and knowing capabilities that will be crucial for firms to gain as a sustainable competitive advantage"' **Human capital** '"is the sum of employees 'competence, knowledge, skills, innovativeness, attitude, commitment, wisdom, and experience"' **Structural capital** is described as '"the valuable strategic assets of organisational capabilities, organisational culture, routines, procedures, information systems, hardware, software, databases, company images, patents, copyrights, trademarks, and so on"'	Herremans et al. (2011); Hsu and Fang (2009); Wang, Wang and Liang (2014)

	Relational capital is '"the knowledge and learning capabilities that exist in relationships between an organisation and its external stakeholders"'	
Organisational success (OS)	**Operational performance** refers to the customer satisfaction, cost management and productivity of the company. **Financial performance** measures the growth of the organisation's annual profits.	(Wang, Wang & Liang, 2014)

3.5 Hypothesis Development

Based on the existing literature, the below sections (Sections 3.5.1 to 3.5.3) generate three main hypotheses that are linked to the research questions addressed in this study.

3.5.1 Organisational Culture

Knowledge is an enduring resource of competitive advantage and exploration. The arena of knowledge management is significant because it assists and supports organisations in devising a strategy which they can employ in order to compete efficiently in the market and/or an information-based economy. Organisational structure forms the environment where all the activities are staged (Al-Adaileh & Al-Atawi, 2011). An advanced level of knowledge coordination and sharing within the organisation is of supreme importance as it paves the way for creativity up the ladder. It helps individuals and groups to understand the policies and desired outcome of the organisation, thus facilitating their work (Bennett & Gabriel, 1999). This sharing is done both explicitly and tacitly. This relationship of organisational culture and knowledge-sharing is also important at an administrative level; for example, it is important when selecting and employing the right person for the job.

Culture is central to knowledge management. Dalkir (2011) states that 'corporate culture is a key component of ensuring that critical knowledge and information flow within an organisation' (p.185). There is a growing number of studies that link culture to knowledge management based on several different perspectives. Organisational culture is associated with knowledge creation, knowledge-sharing and knowledge application (Al Saifi, 2015; Dalkir, 2011). It influences how people access, contextualise and update their knowledge across the cycle of knowledge management in an organisation (Dalkir, 2011). National culture shapes organisational culture and consequently influences the organisation's knowledge management practices (Arpaci & Baloğlu, 2016; Zhang, De Pablos & Xu, 2014). Cultural values are

generally drivers of knowledge-sharing (Mueller, 2012); for example, a group culture may support idea-generation and knowledge-sharing among team members (McAdam, Moffett & Peng, 2012). Organisational culture indicators such as trust and communications are core factors in knowledge-sharing (Al-Alawi, Al-Marzooqi & Mohammed, 2007; Hsu et al., 2007; Kucharska & Kowalczyk, 2016). For instance, low trust may particularly constrain collaboration and tacit knowledge-sharing (Holste & Fields, 2010; Kucharska & Kowalczyk, 2016), while communication style and media of communications are critical in effective knowledge-sharing and transfer (Klitmøller & Lauring, 2013; Panahi et al., 2016).

Notwithstanding the fact that a strategic view on knowledge environments is crucial, the managerial perspective is rarely considered in knowledge sharing studies but cannot be considered the same as employee perspective. The knowledge management roles expected of a manager are often key to shaping the organisation knowledge environment and performance, which without careful consideration could enhance the probability of poor decisions on knowledge process, procedures and intellectual capital development for improved performance. The author considers that the gaps in understanding organisation knowledge environments relates to a lack of attention to management and strategic issues.

RQ1: How does organisational culture influence knowledge environment in the organisational success of information technology firms in Saudi Arabia?

- **a.** From an employment perspective.
- **b.** From an executive and manager perspective.

Drawing from the theoretical knowledge and in order to answer the research question, the following hypothesis has been developed:

H1a: *There is a positive relationship between certain aspects of organisational culture (interpersonal trust, communication and technology support) and knowledge-sharing types (explicit and tacit) in Saudi IT organisations.*

Personalisation and codification – Trust, mutual communication and collaboration are the most important facets of any organisation that seeks to implement a personalisation approach to enabling knowledge. There is scant literature on the relationship between organisational culture and the knowledge management strategies of an organisation. Top leadership should always try to lead from the front, setting a personal example and ensuring that nepotism and favouritism are not a part of their organisation (Carmeli & Azeroual, 2009). Every staff

member should be treated equally. Establishing, enforcing and communicating a code of conduct to all staff within an organisation will help to keep the organisation on the desired path. Knowing the staff and their staff expertise is the core function of any company's management. The more proficient management is in specifying tasks, the greater its yield.

The role of culture is evident for organisations that pursue a personalisation approach (Dalkir, 2011). However, there are certain organisational cultures that are deeply ingrained in organisations' overall processes and structures and such cultures are bound to shape the codification of knowledge as well (Zack, 1999). Personalisation is inherently social in nature. Culture is a social construct. Conversely, cultural values, norms and attitudes may affect social interactions in both offline and online environments. Organisational culture generally affects an organisation's ability to establish productive relationships within and outside the organisation (Beugelsdijk, Koen & Noorderhaven, 2006). Organisations manage codified knowledge through information systems. It is important to note that culture affects the use of information systems. There is some evidence to suggest that cultural values may affect the intention to use technology and the actual use of technology in Saudi Arabia (Al-Gahtani, Hubona & Wang, 2007). There is some evidence to suggest that organisational culture tends to influence information sharing and use among individuals in an organisation (Choo et al., 2008; Diamant, Fussell & Lo, 2009). Cultural indicators such as IT support are significant in knowledge creation, sharing and application (Al Saifi, 2015), specifically in relation to codified knowledge. Therefore the following hypothesis is proposed:

H1b: *There is a positive relationship between certain aspects of organisational culture (interpersonal trust, communication and technology support) and knowledge-sharing approaches (personalisation and codification) in Saudi IT organisations.*

Knowledge-sharing process – Understanding employees and providing them with incentive, care and welfare is what makes them loyal and reliable (Bloodgood & Chilton, 2012). Ensuring there is harmony between employees is important in achieving desired results as well as greater levels of trust and improving the strength of relations within the organisation. This leads to improved productivity and, ultimately, to set revenues. This also includes the collection of desired knowledge and understanding and passing it to the concerned parties, thus completing the knowledge cycle and contributing positively to the overall organisational strategy. Individuals will donate or collect knowledge depending on some cultural concerns (Chai &

Kim, 2012). The influence of culture may be stronger for tacit knowledge-sharing than explicit knowledge-sharing (Suppiah & Singh Sandhu, 2011). Organisational climate, which implicitly denotes some cultural aspects, influences employees' subjective norms about knowledge-sharing and their knowledge-sharing intentions, which ultimately affects both knowledge donation and collection (Tohidinia & Mosakhani, 2010). Trust among organisational members may facilitate knowledge donation and knowledge collection, both of which ultimately affect knowledge utilisation (Chen & Hung, 2010), especially tacit knowledge-sharing (Holste & Fields, 2010). Therefore, the following hypothesis is proposed:

H1c: *There is a positive relationship between certain aspects of organisational culture (interpersonal trust, communication and technology support) and knowledge-sharing process (collection and donation) in Saudi IT organisations.*

Intellectual capital – The use of modern technology, innovative methods and techniques in line with desired structure and relational alterations are necessary for organisations to remain competitive in this fast-moving world (Holste & Fields, 2010). Companies need to develop new strategies and policies and incorporate new trends to ensure profitability and reliability. Company management has to specifically weigh up their options and employ the best possible IT and operational models that facilitate their ultimate motive. The structure developed should encourage teamwork and the desired results can only be achieved when people work together to achieve a common goal facilitated by structural and procedural domains (Bueno et al., 2010).

Practitioners and researchers may not sufficiently articulate the guidelines for intellectual capital development and utilisation without addressing the cultural issues embedded in the environments where the organisations operate (Chaminade & Johanson, 2003). Organisational culture is a constitutive element of intellectual capital, especially structural capital (Martín-de-Castro et al., 2011; Sánchez-Canizares, Ángel Ayuso Muñoz & López-Guzmán, 2007). In fact, 'culture is the central nucleus around which the remaining integrated capitals configure' (Sánchez-Canizares, Ángel Ayuso Muñoz & López-Guzmán, 2007, p. 409). An organisational culture that will support intellectual capital development and utilisation includes 'the level of cultural homogeneity, or level of coherence, acceptance and general commitment to cultural values, business philosophy and ethics, social climate, or managerial commitment towards some concrete cultural values and attitudes' (Martín-de-Castro et al., 2011, p.657). Such cultural aspects and the national culture in the country where the organisation is established

will affect the implementation and management of intellectual capital (Lee, Lin & Lin, 2017; Lynn, 1999; Nazari et al., 2011).

Consequently, practitioners and researchers ought to remember that intellectual capital is best analysed depending on context (Angel Axtle Ortiz, 2009), because the perception and operationalisation of knowledge and intellectual capital in Western countries cannot be directly transferred to non-Western countries (Andriessen & van den Boom, 2007). For example, a country like Saudi Arabia, which has a high power distance, high uncertainty avoidance and is collectivist, may have lower levels of intellectual capital development than countries with lower power distance and uncertainty avoidance (Lee, Lin & Lin, 2017). Nonetheless, even the understanding of knowledge and intellectual capital in Western countries is different from that of non-Western countries (Andriessen & van den Boom, 2007). Therefore, the following hypothesis is proposed:

H1d: *There is a positive relationship between certain aspects of organisational culture (interpersonal trust, communication and technology support) and intellectual capital (human, structural and relational) in Saudi IT organisations.*

Organisational culture and performance – Understanding the market, users, sustainability and demand of a product are important factors that are essential when establishing the future course of action for the organisation that makes/sells that product. Information should be gathered and shared at all tiers to gain the desired outcome. This information/knowledge-sharing forms the core of the organisation's operational and financial strategy and must be planned diligently after considering all requisite factors (Akbar, 2003). A harmonised outcome will be achieved if the organisational culture and procedures are in line with strategy. There is growing evidence of the link between organisational culture and various measures of organisational efficiency, growth and performance according to previous studies mentioned earlier (Wang, Shieh and Wang, 2008).

Organisational culture is the core of employees' commitment, satisfaction, retention and performance (Anitha & Begum, 2016; Arifin, 2014; Mohr, Young & Burgess Jr, 2012). Employees' satisfaction and performance are key drivers for organisational performance (Shiu & Yu, 2010). Additionally, organisational culture influences employees' knowledge-sharing behaviour, which can impact organisational performance (Suppiah & Singh Sandhu, 2011). Organisational culture is a core driver for the general performance of an organisation (Ng'ang'a

& Nyongesa, 2012; Ojo, 2010; Shiu & Yu, 2010). For instance, 'firms with higher relative levels of trust embedded in the organisational culture are more likely to outperform similar firms with lower levels of trust' (Nold III, 2012, p.16). Work cultures with communication styles and patterns that are designed to support employee performance (Bedarkar & Pandita, 2014; Chandrasekar, 2011), knowledge-sharing and team collaboration positively influence organisational performance (Nir, Ding & Chou, 2012). Therefore, the following hypothesis is proposed:

H1e: *There is a positive relationship between organisational culture (interpersonal trust, communication and technology support) and organisational performance (operational and financial) in IT Saudi organisations.*

3.5.2 Knowledge Environment

Although there is a considerable research on knowledge management, there is insufficient understanding of how different aspects of knowledge management conflate to facilitate organisational success. Keeping the prevailing markets in view, is very pertinent to say that the companies can achieve desired productivity and competitive ascendancy by employing and attaining proficiency in defined avenues, which forms the basis of any organisational learning model. One of the most common methods of measuring organisational learning is by using the concept of the learning curve. The organisational learning curve establishes a relationship that displays whether an organisation creates more of a product or service. It defines the methods and strategy employed by an organisation to enhance its output, efficacy, dependability and standards of production. Learning curves fluctuate with an organisation's learning rate and, in turn, the learning rate is affected by individual skills and expertise, developments and expansion of organisation's technology, and enhancements in the structures, procedures and techniques of coordination (Frost, 2010).

Relationship between knowledge-sharing types and knowledge-sharing approaches - Knowledge and information are widespread in an organisation on a need-to-know basis. The knowledge is also classified, in that some information is explicit and shared with all the employees while other knowledge is tacit. Effectively, in order for the company to operate productively, different types of knowledge are used on different occasions (Akbar, 2003). The methods and approaches used for sharing differ in mechanics and procedures; for example, personalisation and codifications are techniques, that are utilised to safeguard knowledge, thus

ensuring it is proliferation free (Dewhurst & Cegarra Navarro, 2004). Although knowledge-sharing literature rarely establishes the differences between sharing tacit and/or explicit knowledge, some scholars (Lee, 2001; Lin, 2007; Suppiah & Singh Sandhu, 2011; Wang, Wang & Liang, 2014) recognise the importance of exploring the role of different types of knowledge in an organisation's knowledge processes. Additionally, a few studies explore the role of knowledge-sharing approaches. It is important to recognise that the personalisation approach is closely associated with tacit knowledge while codification is an approach for explicit knowledge-sharing (Desouza, 2003; Jasimuddin, Klein & Connell, 2005; Panahi, Watson & Patridge, 2013; Wyatt, 2001). According to Wyatt (2001), codification is a people-to-document approach suitable for explicit knowledge management, while the personalisation approach is a people-to-people approach suitable for enabling tacit knowledge-sharing and transfer. In other cases, we may find that personalisation makes it easy for employees to share knowledge, as employees are able to understand the usefulness of knowledge and this improves their satisfaction with knowledge-sharing systems of the organisation (Lai, Wang & Chou, 2009).

The second research question addresses the knowledge environment, which contains both knowledge-sharing and intellectual capital factors:

RQ2: What are the main factors that influence the use of knowledge-sharing (knowledge-sharing type, knowledge-sharing approach and knowledge-sharing process) and organisational success?

Drawing from the theoretical knowledge and in order to answer the research question, the following hypothesis has been developed:

H2a: *There is a positive relationship between knowledge-sharing types (explicit and tacit) and knowledge-sharing approaches (personalisation and codification) in Saudi IT organisations.*

Relationship between knowledge-sharing approaches and knowledge-sharing process – Collection and donation are two distant spheres, with the knowledge collected through different spheres in a raw form and then worked upon and analysed to achieve the desired interferences to support business decisions. Information, knowledge or decisions thought to be necessary are donated or disseminated to all concerned through codification, personalisation or both. Most organisations use personalisation and codification techniques to disseminate essentials or, if this is not possible, to disseminate it through coding. When individuals donate and collect knowledge through knowledge repositories such as databases, then the organisation's

knowledge-sharing approach or strategy is codification (Hansen, Nohria & Tierney, 1999). The information and knowledge is then classified and categorised to ensure only authorised individuals can access it (Argote, 1999). On the other hand, when individuals donate and collect knowledge through person-to-person interaction, then the organisation's knowledge-sharing approach is personalisation (Hansen, Nohria & Tierney, 1999). The organisation thus allows individuals to work through communities and interaction to access knowledge, i.e. a community view of knowledge (McMahon, Lowe & Culley, 2004).

Due to the evolution in technology for socialisation, it is becoming easier than ever before for organisations to enable a personalisation strategy. Huysman and De Wit (2004) state that a personalisation strategy may overcome the knowledge-sharing challenges encountered through a codification strategy. In fact, social technologies offer a sufficient context and easy to use platform that allows effortless knowledge donation and collection through person-to-person interaction (Helms, Cranefield & Reijsen, 2017; Von Krogh, 2012). Organisations may have to consider the fact that people are the single most important factor in knowledge management (Dalkir, 2011). Personalisation allows individuals to establish ties which are crucial for tacit knowledge-sharing (McMahon, Lowe & Culley, 2004). Personalisation may enable knowledge-sharing more than the codification approach when a firm intends to foster creativity through channelling individual expertise (Hansen, Nohria & Tierney, 1999). Codification may enable knowledge-sharing more than the personalisation approach when a firm intends to foster the high-quality and reliable reuse of knowledge (Hansen, Nohria & Tierney, 1999). Therefore, managers ought to be aware that the knowledge-sharing approaches define the organisation's knowledge-sharing processes and are closely related to the organisation's overall business strategy (Hansen, Nohria & Tierney, 1999). Therefore, the following hypothesis is proposed:

H2b: *There is a positive relationship between knowledge-sharing approaches (personalisation and codification) and the knowledge-sharing process (collection and donation) in Saudi IT organisations.*

Relationship between knowledge-sharing types and intellectual capital – the distinction between tacit and explicit knowledge is very crucial in the development and utilisation of intellectual capital (Wang, Wang & Liang, 2014). In fact, for one to understand an organisation's intellectual capital, they need a clear understanding of the organisation's knowledge (Edvinsson & Sullivan, 1996). While some studies (Saint-Onge, 1996; Wang,

Wang & Liang, 2014) indicate that tacit knowledge is the most significant resource for intellectual capital development, others (Egbu, 2004; Wiig, 1997) indicate that both types of knowledge are relatively crucial in the development of intellectual capital. Consequently, an organisation must convert tacit knowledge to explicit knowledge in order to increase its value towards organisational advantage (Egbu, 2004; Wiig, 1997).

One can argue that there is a close relationship between knowledge types (tacit and explicit) and the intellectual capital of the organisations. The two resources, knowledge and intellectual capital, are constitutive parts of a knowing organisation. However, existing studies insufficiently define the relationship between these knowledge types and the intellectual capital of an organisation. Knowing employees and finding the best structural and relational procedures adds to the success of any organisation. To avoid partiality and overdependence on certain staff members, the concept of teamwork is incorporated. The knowledge is provided to some employees explicitly while others receive it tacitly owing to its nature and employment (Dewhurst & Cegarra Navarro, 2004).

The third research question contributes towards the success of information technology firms in Saudi Arabia and intellectual capital as presented below.

RQ3: Towards the success of Saudi information technology firms the following questions are addressed:

a. How does the type of knowledge-sharing (explicit and tacit) impact on the intellectual capital factors (human, structural and relational)?

Representing the theoretical knowledge in order to answer the research question, the following hypothesis is developed:

H3a: *There is a positive relationship between knowledge-sharing type (explicit and tacit) and intellectual capital (human, structural and relational) in Saudi IT organisations.*

Relationship between knowledge-sharing approaches and intellectual capital – Many organisations have developed systems and procedures to support knowledge management and intellectual capital development. With advancements in technology and increasing awareness of the value of knowledge, the decision on how and what to denominate and disseminate has become more important and crucial (Nonaka & Takeuchi, 1995). An appropriate decision about the implementation of knowledge systems will help organisations achieve their enlisted and perceived aims and objectives (Carmeli & Azeroual, 2009). Personalisation and codification

techniques must be selected as knowledge management strategies in order to ensure that the information and knowledge can reach the person it is meant for (Moran, 2005). Edvinsson and Sullivan (1996, p.358) write, 'There is a relationship between the degree of codification of knowledge and the amount of value it can be said to command.' Further still, the personalisation approach influences the ease of use, usefulness and user satisfaction of knowledge and knowledge management systems in an organisation (Lai, Wang & Chou, 2009). Ease of use and usefulness of knowledge are crucial for enabling valuable knowledge, as intellectual capital is 'knowledge that can be converted into value' (Edvinsson & Sullivan, 1996, p.358). To improve organisational performance and value creation, there has to be a fit between an organisation's intellectual capital and its knowledge management strategy (Kianto et al., 2014; Wang et al., 2016).

Knowledge-sharing approaches are thus closely linked to intellectual capital in fostering organisational advantages in various ways through moderation, mediation and direct effects. Kianto et al. (2014) propose that organisations should consider the following options when striving for a fit between the two. First, knowledge management approaches may moderate the effect of intellectual capital on their performance or, alternatively, intellectual capital may moderate the effects of knowledge management approaches on organisational performance. Kianto et al. (2014) further suggests that organisations may also consider the mediating effects of their knowledge management approaches on the relationship between intellectual capital and organisational performance. Therefore, the following hypothesis is proposed:

RQ3b. How do knowledge-sharing approaches (codification and personalisation) impact intellectual capital factors (human, structural and relational)?

H3b: *There is a positive relationship between knowledge-sharing approaches (personalisation and codification) and intellectual capital (human, structural and relational) in Saudi IT organisations.*

Relationship between knowledge-sharing process and intellectual capital – Researchers and practitioners have to realise that 'the integration of intellectual capital and knowledge management requires alignment of knowledge management processes with intellectual capital assets to meet the organisation's strategic needs' (Zhou & Fink, 2003, p.34). To achieve this alignment, managers will have to consider the following four areas: the monitoring and facilitation of knowledge-related activities; establishing and updating knowledge

infrastructure; the creation, renewing and organising of knowledge assets; and utilising knowledge assets effectively (Zhou & Fink, 2003, p.35). Knowledge-related activities might include knowledge-sharing processes, where the organisation will monitor and facilitate knowledge-donating activities such as demonstrations, and knowledge-collection activities such as searching or browsing. Establishing infrastructure and organising and utilising knowledge assets improves the value of knowledge in the organisation, which may increase the organisations' intellectual capital.

Like knowledge types and knowledge-sharing approaches, knowledge-sharing processes (knowledge collection and donation) may also relate closely to the organisation's intellectual capital development and utilisation. There is evidence that some knowledge processes, such as the knowledge creation process, influence organisational performance through the mediating effect of intellectual capital (Mehralian, Nazari & Ghasemzadeh, 2018). Knowledge-sharing is a constitutive part of an organisation's knowledge creation process. Consequently, knowledge-sharing processes work hand in hand with an organisation's intellectual capital to reach the organisation's objectives. For instance, intellectual capital will affect the knowledge-sharing behaviour in an organisation (Radaelli et al., 2011). Knowledge-sharing behaviour may include knowledge donation and knowledge collection as well as the quality of knowledge shared or the quantity of knowledge shared among individuals. Knowledge-sharing processes tend to influence organisations' innovation capability and performance (Liao, Fei & Chen, 2007).

RQ3: c. How does the knowledge-sharing process (collection and donation) impact intellectual capital factors (human, structural and relational)?

H3c: *There is a positive relationship between knowledge-sharing process (collection and donation) and intellectual capital (human, structural and relational) in Saudi IT organisations.*

3.5.3 Organisational Success

Every organisation runs on trust and when there is a trust deficit, the efficiency of a company and the loyalty of its employees always comes into question. It is the responsibility of leaders to provide employees with state-of-art technological gadgets and a cordial environment in which the organisation can flourish (Paroutis & Al Saleh, 2009). Leaders must be a strong proponent of harmony and teamwork, which always paves the way towards success. Employees' loyalty towards the organisation is of utmost importance; every member of the

team should feel proud and act as a stakeholder of the organisation. Factors which create disproportion, variance and disharmony should be identified at the earliest possible opportunity and measures taken to eradicate or mitigate them. Informal communication channels and the use of unfair means are considered the major impediments to cordial working environment (Al-Adaileh & Al-Atawi, 2011). They not only create differences in opinion but also always adversely affect the progress of the organisation. Knowledge, which is corresponding and vital, should be shared as per the strategy and employed to achieve success. Structure, and procedures in relation to an approach should always be worked out by the organisation based on their previous experiences and through analysis. An elaborate system of using the latest and innovative ideas coupled with knowledge and the requisite cultural base could lead to success.

Relationship between intellectual capital and organisational performance – Success and meeting set goals always require a tedious and well-formulated set of procedures and processes which are to be undertaken with perfection to ensure that everything goes as planned (Gao, Li & Clarke, 2008). Flexibility and contingency planning in every facet always play a very vital role in ensuring the desired outcomes under diverse situations. From creativity to knowledge management, the process of organisational learning requires extra emphasis and can convert an average organisation into a leading reputable one (Bennett & Gabriel, 1999). There are many measures of organisational performance to which intellectual capital is associated. Intellectual capital fosters the market performance of an organisation (Cabrilo & Dahms, 2018; Dzenopoljac et al., 2017). Intellectual capital improves organisations' innovation performance, product development and brand performance (Cabrilo & Dahms, 2018; Hsu & Fang, 2009). Consequently, intellectual capital enables organisations to improve their earnings and profitability because it allows organisations to improve their efficiency (Dzenopoljac et al., 2017). Improved performance is a pathway to organisational success. Moreover, intellectual capital is a pathway to value creation for an organisation (Isaac, Herremans & Kline, 2009).

RQ4: How does intellectual capital influence the features of organisational success in terms of operational and financial performance?

Drawing from the theoretical knowledge in order to answer the research question, the following hypothesis is developed:

H4: *There is a positive relationship between intellectual capital (human, structural and relational) and organisational performance (operational and financial) in Saudi IT organisations.*

RQ5: How do organisational culture and the knowledge environment influence organisational success for Saudis and non-Saudis in Saudi Arabia's IT firms?

The final research question is a general question to test the entire hypothesis and compare the results between the Saudi and non-Saudi sample presented in the final phase of the quantitative analysis, the sequential equation modelling analysis (shown in Chapter 7). This will give a clear answer to the research question concerning how to differentiate between the points of view of local and foreign IT managers and employees in Saudi Arabia's IT organisations.

3.6 Significance and Contribution

Despite the growing number of studies related to organisational culture and knowledge management, there is insufficient understanding of how an organisation can improve its performance through organisational culture, multiple knowledge-sharing practices and intellectual capital. Moreover, the combination of organisational culture, knowledge-sharing and intellectual capital is of great importance in the development of a knowledge-based organisation. This study develops a research framework of organisational culture, knowledge-sharing practices and intellectual capital for the sake of organisational success.

This study further contends that knowledge types, knowledge-sharing approaches and knowledge-sharing processes may have a direct influence on organisational success. The findings of this study will help organisations to recognise, plan and apply the appropriate knowledge-sharing practices and organisational culture. In addition to this, the findings of this study will be of great significance in guiding IT firms in Saudi Arabia towards organisational success, particularly operational and financial performance.

3.7 Chapter Summary

This chapter summarised some of the existing empirical models depicting the role of knowledge-sharing and intellectual capital in organisational performance such as outsourcing and innovation capability, operational and financial performance and knowledge management success. This chapter also gathered evidence on the role of organisational culture in organisational performance and the chapter identified a gap in the knowledge relating to the extensiveness of the organisation's knowledge environment. In this chapter, it was argued that the organisation's knowledge environment constitutes several elements that are closely supportive of each other: knowledge-sharing type, knowledge-sharing approaches and

knowledge-sharing processes. It is imperative for researchers and practitioners to recognise the role played by the different elements of the knowledge environment in organisational success and successful knowledge management in organisations. The knowledge environment of an organisation is supported by the organisation's intellectual capital and organisational culture. The chapter thus presents a research model on the relationship between organisational culture, knowledge environment and organisational success.

The chapter hypothesises that organisational culture and the knowledge-sharing practices (knowledge-sharing type, knowledge-sharing approaches and knowledge-sharing process) and intellectual capital are of great significance in organisational success. First, the knowledge-sharing type maintained and enabled by an organisation, explicit and tacit, are crucial for organisational success. Second, knowledge-sharing approaches that facilitate knowledge flow in the organisation, such as codification and personalisation, influence knowledge-sharing among individuals. Third, the knowledge-sharing process consists of the collection and donation of knowledge within the organisation. The research model proposed in this chapter suggests that knowledge-sharing type, knowledge-sharing approaches and knowledge-sharing processes affect the intellectual capital of the organisation (the human, structural and relational capital) which, in turn, could affect the organisation's success. Organisational culture is a critical factor for knowledge-sharing in any organisation. The upcoming chapter, Chapter 4, describes in detail the research designs and methodology of this study.

Chapter 4: Development of the Research Design and Methodology

4.1 The Development of the Research Problems

The design of the research is significant as it maps and guides the research towards addressing the main study aims and objectives. It also directs how to connect the study' hypotheses and the research questions by providing a logical flow chart of the study in every stage and milestone.

This chapter explains in detail the research design as follows. Section 4.1 explains the development of the research problems. Section 4.2 shows the development of the research conceptual map and Section 4.3 outlines the development of the questionnaire and pilot study. Section 4.4 describes the main method of data collection. Section 4.5 describes Phase A of the quantitative data analysis. Section 4.6 explains the research design then Section 4.7 outlines the research methodology. Section 4.8 presents the research design instrument, Section 4.9 provides the research instrumentation and Section 4.10 describes the survey instrument. Section 4.11 outlines the alignment for the constructs, dependency, research questions and indicators of existence, Section 4.12 describes the pilot study and Section 4.13 explains the sample and sample size. Section 4.14 presents the data collection, Section 4.15 outlines the survey's administration, Section 4.16 describes the data analysis statistical methods and Section 4.17 identifies the significance and contribution of the chapter before Section 4.18 concludes the chapter with a summary. Figure 4-1 shows the research activities that are designed for the present study.

The first stage of the research involved a basic literature review. The review process continues throughout the whole life cycle of the research, focusing on the field of organisational culture and knowledge-sharing. As the research project progressed, the literature review focused on the research conducted in the following areas:

- Organisational culture
  - Interpersonal trust
  - Communication
  - Technology support
- Saudi Arabia's organisational setting
- Knowledge-based economy in Saudi Arabia

- Knowledge and knowledge management
- Knowledge environment
    - Knowledge-sharing type
    - Knowledge-sharing approaches
    - Knowledge-sharing process
- Intellectual capital
    - Human capital
    - Structural capital
    - Relational capital
- Organisational success
    - Operational performance
    - Financial performance

In this stage following the literature review, main problems within the research are identified and clearly investigated in the organisational cultures in Saudi Arabia IT firms, and how does organisational culture affect the knowledge environment and intellectual capital process. This will help identify any conflict between the organisations' knowledge-sharing type, knowledge-sharing approaches, knowledge-sharing process and intellectual capital (human, structural and relational), how they link to each other and how does organisational culture influence the organisation's success from an operational and financial perspective.

4.2 Development of the Research Model

Based on the literature review, a limitation of certain aspects of each factor of the research was established therefore, the research questions and hypothesis were developed. In this stage of developing the research design, the focus is on clarifying the relevance of the research questions and hypotheses to address the gaps identified during the literature review. Therefore, answering the research questions established in chapter 1 Section 1.6, a research model was proposed in chapter 3 (Figure 3-8). The relationships between the constructs are identified in detail in chapter 2 were the basis for developing the hypothesis are presented. The development of the questionnaire used in this study is outlined in the following sections.

4.3 Development of the Questionnaire and Pilot Study

A questionnaire instrument was developed as an approach for conducting the research, which involves a quantitative empirical investigation that evaluates each item in the survey conducted based on its relevance and consistency with each definition in the research model (Figure 3-8). After this step, a pilot study was conducted in certain organisations in Saudi Arabia in order to refine the approach and techniques. The aim was directed in this stage to design a framework that could be implemented later in other organisations in Saudi Arabia. The results of this study are described in Chapter 5.

The final survey was conducted after receiving the outcome of the survey instrument (the pilot study). The survey can provide detailed information not forthcoming from the pilot study.

4.4 Data Collection

After designing the questionnaire for both the survey and interviews as a validation tool, a physical sample was first sent to Saudi Arabia's IT firms selected for the data collection. This technique allowed the prospective participants of the surveys to have an understanding of the questionnaires and the study before the researcher actually visited the selected IT firms in Saudi Arabia to distribute the survey questionnaires.

4.5 Analysis Phase A: Quantitative Data Analysis

4.5.1 Data Analysis Approach

A questionnaire that contained 49 closed questions and 3 open questions was used to collect data from 37 Saudi IT organisations. And open-ended questionnaire was used for interviews for the 13 case studies. Before collecting the data, ethics approval was obtained from UTS' Human Research Ethics Committee (HREC). The quantitative data was analysed using SPSS (Version 25.00) software.

After receiving the surveys from the participant, specific statistical techniques were used in this research to analyse the data gathered from the completed surveys. The data analysis serves to fulfil three main aims: (1) getting a feel for the data by checking the central tendency and the dispersion; (2) testing the sufficiency of the data by measuring reliability and validity; and (3) testing the hypotheses which were developed for the research (Sekaran, 2003). Partial least squares regression (PLS) based on the structural equation modelling (SEM) technique was used to analyse the data gathered from the quantitative survey. The PLS technique is increasingly

used in information systems research due to its ability to model small-to-medium sample sizes (Hair, Ringle & Sarstedt, 2011; Hair Jr et al. 2016). For qualitative analysis, the data collected from interviews was interpreted to validate the quantitative results.

The quantitative literature in management science most commonly uses a statistical approach to validate quantitative models. This was mainly either multiple relapse analysis, discriminant analysis or analysis of variances. However, the restrictions in these approaches soon become rapidly clear in a discipline that deals with complex phenomena, since they do not allow for the evaluation of comprehensively complex search models that take into account the measurement errors. Structural equation methods, however, allow the evaluation and comparison of globally complex search models by taking into account the measurement errors as well as being able to concurrently test the existence of causal relationships between several explanatory hidden variables and several variables to be modified between one another. These methods also allow the construction and testing of the validity and reliability of several indicators.

The results were used to test the hypotheses. A report of the research findings was presented along with recommendations for future research. The results from the collected data were analysed using the above stated statistical methods to examine and establish the internal validity of the research model. Therefore, the research model developed in this study may be used in future research, incorporating any necessary improvements.

4.5.2 Schematic Diagram of Research Design

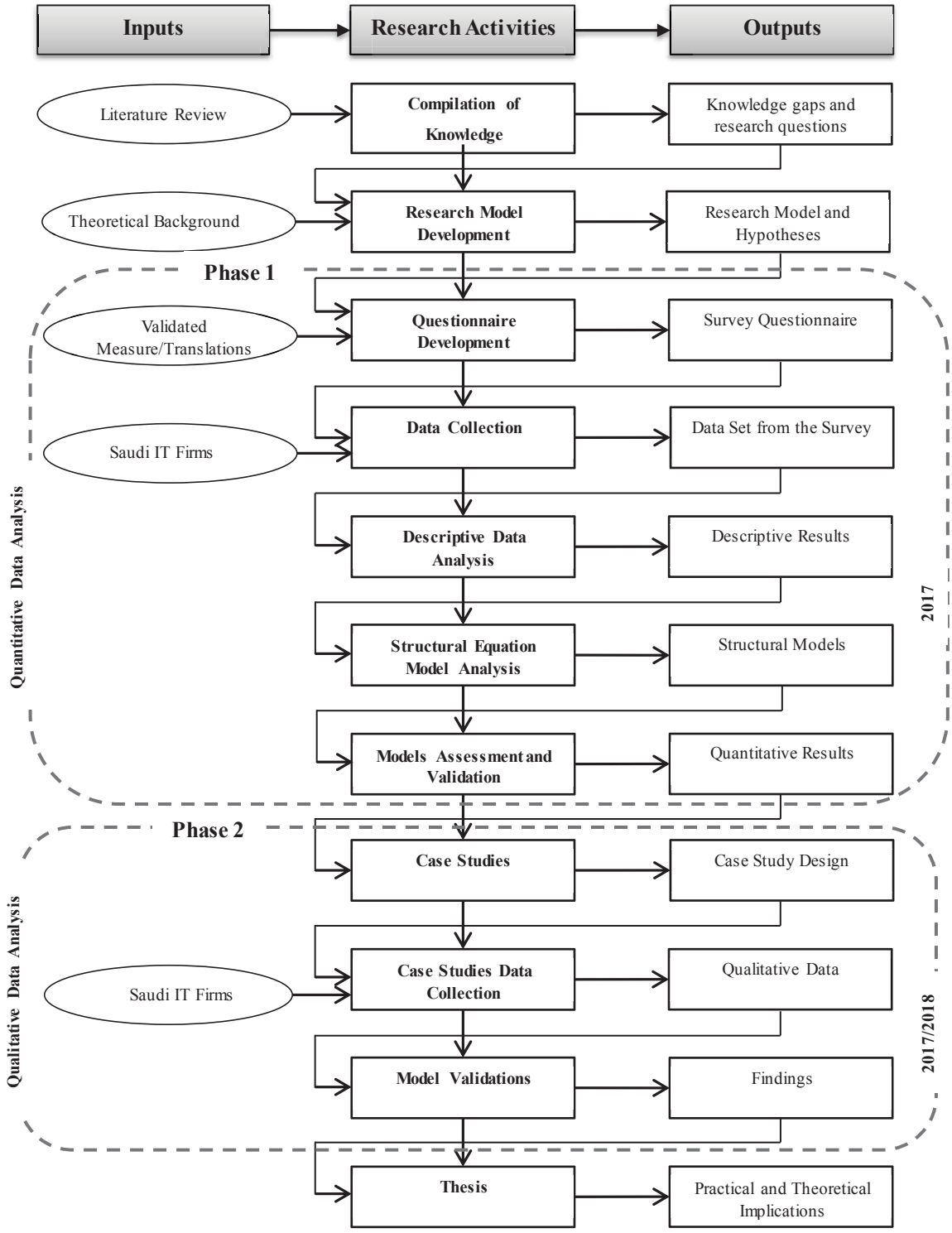


Figure 4-1 Schematic Diagram of Research Design

4.6 Research Methodology

In order to define the production of data and the selection of research tools and methods, one must identify the mean of epistemological and methodological frame of reference which outline the research methods. The current study presents a post-positivism approach that does not reject quantitative methodology, but it does challenge to join it within a more complex research design. Post-positivism is more cautious concerning strong and one-sided interpretations and restrained regarding the too extensive (or obsessive) use of (quantitative) data and methods (Adam, 2014).

The assumptions of positivism are that truth is an independent part of a whole, theory should be deductive and prior to rational cause and effect is possible, and that scientific research is objective/value free. This paradigm was examined and contrasted to assumptions about interpretivism regarding understanding coming from multiple realities, the possibilities of emerging theory, contextual processes that focus on meanings, and perspectivity (Henderson, 2006). Although methods for data collection such as quantitative and qualitative approaches might be mixed, the traditional approach to science was that positivism and interpretivism were distinct ways of knowing. Ironically, this perspective represented a dualistic way of thinking that is sought to challenge.

According to Samdahl (1999) qualitative method did not adhere to the epistemological and ontological premises of interpretivism. She suggested that this type of research is better called post-positivism, which she described as research that uses qualitative data with a belief in the importance of subjective reality, but does not abandon tenets of conventional positivism as of the several paradigms that might be used to study the human behaviour.

Post-positivism provides another paradigm that reflects both quantitative and qualitative data, and a mix of the two, are used. Acknowledging and using this ontology will enable researchers to expand their options for data collection and will also underlie the pragmatic need to conduct research and examine findings that work (Henderson, 2011).

Therefore, triangulation or the integration of methods, and further meta-analysis and other combinations of quantitative and qualitative elements based on emphasizing the context for elements derived from the study that focuses on the variables results in fragmentation and a loss of the specifics of the concrete case (Bryne and Ragin, 2010).

This research was based on a descriptive and theoretical analysis of methods that are appropriate to the field of study and principles, particularly to a branch of knowledge. The methods used in this research employed certain principles and practices that underlie much of the research in this field of study. In order to meet the research aims and objectives and to map the hypothesis, one must gather adequate data to link them to one another and answer the main research questions. Therefore, the research approach needs to adapt and suit the research problem and to be an effective means of collecting valid data. Consequently, the research design must be validated by researchers and appropriate for the purpose of this study, its main objectives, research modelling, time-line and structure of analysis. This will help in decision-making regarding the sample that was used in the data collection approach and how it was measured and then analysed.

As stated in Chapter 2, this research is studying Saudi Arabia as it is a developing country that is currently moving towards a knowledge-based economy. Examining Saudi Arabia allows us to examine the role of organisational culture on the main pillars of the knowledge environment and explore their effect on Saudi Arabian IT firms and their organisational success from an operational and financial performance.

4.6.1 Development of Research Methods

In a research project of this nature, theorists differentiate between quantitative and qualitative methods, although some theorists accept that the two methods are not mutually exclusive (Crompton and Jones, 1988). The research approach adopted for the survey needed to be suitable to the research problem and to be in effective means of collecting valid data. In order to do this, a mixed-method approach was adopted for this research.

The distinction between quantitative and qualitative research methods occurs on two levels. First, it is used to distinguish between different types of data evidence. Quantitative research methods originally was developed in the natural sciences and examples of quantitative methods include surveys, laboratory experiments and numerical methods such as mathematical modelling. Quantitative research is about quantifying relationships between variables. The researcher measures variables in a sample of subjects and expresses the relationship between variables using effect statistics such as correlations, relative frequencies or differences between means (Hopkins, 2000).

Qualitative studies use methods taken from both psychology and anthropology. Psychological approaches consider individual behaviours and expand these outputs into group culture dynamics, whilst the anthropological methods operate at the group level. Qualitative research does have some distinct features. Qualitative research approaches clearly have their strengths in developing grounded theory about the issues under investigation. Such an approach is valuable when looking at, for example, the cultural complexity within an organisation, since little knowledge will exist about issues such as multiple cultural membership, cultural context at the organisational level and the impact on its performance (Sackmann, 2007).

The focus of qualitative and quantitative research is different. According to Morgan and Smircich (1980), the appropriateness of using qualitative or quantitative techniques depends on the underlying assumptions of the research and the nature of the phenomena studied. Based on these distinctions, the combination of qualitative and quantitative methods appears to be inappropriate, yet mixed-methods research are common. Greene, Caracelli and Graham (1989) outline three purposes for mixed-methods research: (a) triangulation, to corroborate data and obtain convergent validity; (b) complementarity, to fully explain the results of analyses; and (c) development, to guide further data collection, sampling or analysis. Although mixed-methods research is not new, considerable confusion about mixed-methods research persists due to differing interpretations. Some scholars use a very broad definition of triangulation that encompasses complementarity, whereas others, like Greene et al. (1989) distinguish the two as having distinct purposes.

This research study applied a mixed-method approach that incorporated both quantitative and qualitative approaches to validate the research model. Phase A of the research study employed a quantitative method based on the collected data from a questionnaire targeting Saudi Arabian IT firms. The study questionnaire used closed-ended and open-ended questions, distributing 500 surveys at different IT companies in Saudi Arabia. In closed-ended questions, a small set of responses generates precise answers. The respondents are asked to select or rank answers and write their answers for the open questions. The response rate of the questionnaire is increased if it does not take more than 10 minutes to complete. A qualitative research method was carried out in Phase B of the analysis, which supported the validity of the research model. In addition to this, through the quantitative method the PLS approach was used to test the hypotheses and answer the research questions. A five-point Likert scale was used in the closed-ended questions in the questionnaire. The options were Strongly Agree, Agree, Neutral,

Disagree and Strongly Disagree. The five-point Likert scale and encoding will enable the researcher to calculate quantitative data in numeric values.

For the qualitative assessment, around 13 interviews were conducted with executives and top managers in Saudi Arabia IT firms. These 13 case studies allowed the exploration and understanding of complex issues throughout the research. In particular, a holistic and in-depth investigation is required to recognise issues within each element of the research model. One significant reason to conduct a case study using this research method is that with other methods, the researcher may be limited to quantitative methods in providing holistic and in-depth explanations of the social and behavioural problems in the questions. Through the case study method, the researcher will be able to go beyond the quantitative statistical results and understand the behavioural conditions with a more clear perspective. Moreover, a thematic analysis will encapsulate the open questions held in the survey questionnaire. This analysis summarises the answers provided for the three open-ended questions in the survey questionnaire by the participants. Therefore, including both quantitative and qualitative data and case study research will enhance the explanation of both processes and outcome of the phenomenon through the complete observation, reconstruction and analysis of the cases under investigation (Tellis, 1997).

4.7 Research Design Instrumentation

This research study has a descriptive structure in which it is significant to understand the nature and function of the research questions. It is critical to maintain focus on the questions answered by the research. Those questions will determine the appropriate approach to investigate in the results of the research methodology.

Descriptive research utilises both quantitative and qualitative methods within the study. The term *descriptive research* refers to the types of research questions, design and data analysis that are applied in the research study. Since descriptive research can involve the collection of quantitative information that can be in numerical form, such as scores or numbers, descriptive research helps involve and gather data that describes and organises the data collection (Glass & Hopkins, 1984). It also aims to find and observe survey methods that are frequently used to collect descriptive data (Gall, 1989). The main purpose of the descriptive research is to explore and organise findings in order to find explanations and test or validate those explanations (Krathwohl, 1993).

This descriptive method was used to describe the employees of Saudi IT firms through investigating the relationship between the influence of organisational culture on the knowledge environment (which is made up of knowledge-sharing types, approaches and process) and intellectual capital factors (human, structural and relational) and their impact on organisational success in terms of (operational and financial) performance.

4.8 Research Instrumentation

4.8.1 Measures

In this research study, items operationally used the selected constructs, which were mainly adapted from previous studies by translating and modifying them to be used in organisational culture and knowledge-sharing contexts. All constructs were measured using a set of items and then measured by five-points Likert scale statistical measures (ranging from 1 = Strongly Disagree to 5 = Strongly Agree). The definition and theoretical constructs are described below.

Organisational culture can be measured through three perspectives – integrated perspective, differentiation perspective and fragmented perspective (Kummerow & Kirby, 2014). An integrated perspective views organisational culture as a unified phenomenon across the organisation. A differentiated perspective views culture as a segmented phenomenon with subcultures across departments or tasks. A fragmented perspective views culture as an ambiguous phenomenon where even organisational members are aware of this ambiguity. This study adopts the integrated perspective through which it measures the organisational culture as a unified or common aspect across the entire organisation.

One measure of organisational culture, interpersonal trust, was derived from Li (2003). According to Li (2003), internal trust relations are an essential component that is intangible and is related to understanding interpersonal and group behaviour within the organisation. The second element of communication is the trust factor, which is considered the most significant influence within the organisational culture.

The measurement of communication and IT support was derived from Lin and Lee's (2006) study, which suggests that an increased effort should be made to allow employees to suggest new opportunities and raise social interaction. Lin and Lee (2006, p.80) define IT support as ‘the degree of technological usability and capability regarding knowledge-sharing’. Based on Lin and Lee (2006), IT support relates to employees’ ability to use IT to share knowledge, the

use of knowledge networks to access knowledge and the capability of the organisation to provide technologies that support knowledge-sharing within and outside the organisation. Creating an organisational culture that not only provides IT support but also builds up significant communication, provides incentives to develop new ideas and responds rapidly to new opportunities will help improve the interaction between employees and top management for driving knowledge-sharing intentions.

The knowledge-sharing types measurement was developed based on Wang, Wang and Liang's (2014) research model. They identify both tacit and explicit knowledge as being related to organisational performance through the intellectual capital factors. According to Wang, Wang and Liang's (2014) research model, knowledge-sharing types contribute to intellectual capital, which is considered the main factor within the knowledge environment of this study's research model. In addition to this, knowledge-sharing types represents towards the final factor that is derived for the research model's main elements of organisational success: operational and financial performance.

The knowledge-sharing approaches measurement was adapted from Hansen, Nohria and Tierney (1999) and Lai, Wang and Chou's (2009) research model. In order to personalise knowledge, it needs to be captured and codified so that individuals can generate knowledge. Research (Lee, 2001) has identified personalisation as one of the success factors of knowledge management systems. In order to fit the personalisation tool within the firm, to influence employees' satisfaction through the use of knowledge management systems, one must substitute the measure for success and effectiveness in information systems organisations.

The knowledge-sharing process measurement for both collection and donation was taken from Liao, Fei and Chen's (2007) framework. The collection process refers to the behavioural routines and work experience knowledge between colleagues within the organisation. The donation process refers to the degree of employee's willingness to share knowledge between their colleagues.

Intellectual capital is the stock of knowledge in the organisation (Chatzkel, 2002). A number of studies have found a link between intellectual capital and knowledge management, while others have explored the link between intellectual capital and different measures of performance. The intellectual capital measurement was derived from Wang, Wang and Liang (2014) research model, which identified three factors of intellectual capital: human capital,

structural capital and relational capital. These factors are considered success factors for organisations. Human capital was measured as the skills and experiences employees applied to improve their performance. Structural capital was measured as organisational mechanisms deployed to support employees in pursuing their duties and supporting the application of knowledge. Relational capital was measured as the organisation's business relationship with its customers, suppliers and partners.

In relation to organisational success, prior literature focuses mainly on performance while generally ignoring organisational value creation or organisational success. It is important to note that organisational goals and effort influence performance, as performance influences organisational success. Among the most significant measures of organisational success, there are five important areas to which organisations should pay attention to (*5 Important Organisational Success Measures,* 2012). These measures are financial viability, which includes profitability; customer satisfaction; employee satisfaction; contribution to society; and key operational results. This study investigates organisational success as an outcome of the organisational culture and the organisation's knowledge-sharing environment. The organisational success measurement is derived from two main factors of operational and financial performance identified by Wang and Liang (2014).

4.9 Survey Instrument

The instrument of this project was developed based on a literature review of previous studies on organisational culture, knowledge-sharing, intellectual capital and organisational success. The data collection instrument consists of quantitative scaled response questions, which can help to collect the data in a short period with a high response rate (Sekaran, 2006), and it is divided into two sections. Each of the two sections collected information with respect to the feedback of managers and employees from their current setting within their organisation. The first section was composed of questions addressing general background information such as the location of the organisation, type, the number of people working at the organisation, work experience, size, job title, nationality, language, gender and educational level. The second section consists of exploring the profile of managers and employees within their organisational culture through investigating the relationship between the organisational problems, knowledge-sharing and knowledge in their firm.

The second section of the survey explored the four main constructs that cover the following:

1. Organisational culture (OC) and their sub-factors: interpersonal trust (T), communication (C), and technology support (TS); for employees, executives and managers (EM).
2. Knowledge environment (KE), which has four main factors:
    a) Knowledge-sharing type (KST) and their sub-factors: explicit (E) and tacit (T).
    b) Knowledge-sharing approaches (KSA) and their sub-factors: codification (C) and personalisation (P).
    c) Knowledge-sharing process (KSP) and their sub-factors: collection (C) and donation (D).
    d) Intellectual capital (IC) and their sub-factors: human capital (HC), structural capital (SC) and relational capital (RC).
3. Organisational success (OS) and their sub-factors: operational performance (OP) and financial performance (FP).

These constructs are discussed in detail in the following subsections.

4.9.1 Organisational Culture (OC)

This subsection within the questionnaire gathered information regarding organisational culture (OC) in particular employees' level of interpersonal trust (T) to share and transfer knowledge within their organisation, their communication (C) and whether they face any certain obstacles within the organisation regarding sharing knowledge through collaboration, and the type of technology support (TS) they use for knowledge-sharing between one another. The main factor of organisational culture contains three sub-factors:

- Interpersonal trust (T): OC1 (T), OC2 (T), OC3 (T) and OC4 (T).
- Communication (C): OC4 (C), OC5 (C), OC6 (C), OC7 (C) and OC8 (C).
- Technology support (TS): OC9 (TS), OC10 (TS), OC11 (TS) and OC12 (TS).

The items and variables in the survey questionnaire relation to organisational culture (OC) are listed in Table 4-1.

Table 4-1 Organisational Culture (OC) Variables and Items Description

Variable name	Item
OC 1 (T)	I don't hesitate to share my feelings and point of views with my colleagues.
OC 2 (T)	In our company, a considerable level of trust exists between co-workers.
OC 3 (T)	I think that the company fulfils sharing feelings and point of views between employees.
OC 4 (T)	Most of my colleagues are people who I know and thus consider trustworthy.
OC 5 (C)	My organisation's members are satisfied with the degree of collaboration.
OC 6 (C)	I think that the organisation encourages and supports employees to share their knowledge with one another.
OC 7 (C)	There is a willingness to collaborate across organisational units within the organisation.
OC 8 (C)	My organisation provides certain workshops, trainings and meetings with individuals and groups in order to enhance their communication skills.
OC 9 (TS)	I think that the company provides various tools and technologies to facilitate knowledge-sharing and exchange experiences such as emails, intranet, groupware and cloud computing.
OC 10 (TS)	My organisation uses electronic storage to store and retrieve data/information/knowledge such as online databases and knowledge bases.
OC 11 (TS)	I think that there are technological tools available to encourage employees to collaborate for knowledge-sharing purposes.
OC 12 (TS)	I feel that a comfortable amount of knowledge-sharing technologies are available.

4.9.2 Executives and Managers Only (EM)

This sub-section of the questionnaire was designed to assess only executives and managers only (EM) within the organisations and to determine if they have trustworthy relationships with each other and how they could increase their communication capabilities and provide technical tools that would help in knowledge-sharing. This sub-section within the survey questionnaire was developed for executives and managers participants use only.

The items and variables in the survey questionnaire relation to executives and managers only (EM) are listed in Table 4-2.

Table 4-2 Executives and Managers Only (EM) Variables and Items Description

Variable name	Item
EM 1	I think that having a trust relationship between executives and managers within the organisational culture is possible.
EM 2	I think that executives and managers communicate with one another mainly through meetings.
EM 3	I think that my organisation provides technical tools that help executives and managers share knowledge with one another.

4.9.3 Knowledge Environment (KE)

This sub-section of the survey was designed to gather information on four major aspects of the knowledge environment (KE): knowledge-sharing type (KST), knowledge-sharing approaches (KSA), knowledge-sharing process (KSP) and intellectual capital (IC).

4.9.3.1 Knowledge-sharing Type

Knowledge-sharing types (KST) include employees sharing documented reports with one another, if they are offered training programs, whether the organisation is facilitated with IT systems and if employees share knowledge based on their experience.

This sub factor of knowledge-sharing types (KST) contains two main elements:

- Explicit (E): KST1 (E), KST2 (E) and KST3 (E).
- Tacit (T): KST4 (T) and KST5 (T).

The items and variables in the survey questionnaire relation to knowledge-sharing types (KST) are listed in Table 4-3a.

Table 4-3 a.Knowledge-sharing Types (KST) Variables and Item Description

Variable name	Item
KST 1 (E)	Employees in my organisation frequently share existing reports and official documents with other members of my organisation.
KST 2 (E)	Employees in my organisation are frequently offered training and development programs.

KST 3 (E)	Employees in my organisation are facilitated by IT systems invested for knowledge-sharing.
KST 4 (T)	Employees in my organisation frequently share knowledge based on their experience.
KST 5 (T)	Employees in my organisation frequently collect knowledge from others based on their experience.

4.9.3.2 Knowledge-sharing Approaches

Knowledge-sharing approaches focus on how employees document the insights that are gained during work through meetings, for example writing, audio and/or video, which will help in future use such as reviewing customer feedback and employees' learning experience.

This sub-factor of knowledge-sharing approaches (KSA) contains two main elements:

- Codification (C): KSA1 (C), KSA2 (C), and KSA3 (C).
- Personalisation (P): KSA4 (P), KSA5 (P), and KSA6 (P).

The items and variables in the survey questionnaire relation to knowledge-sharing approaches (KSA) are listed in Table 4-3b.

Table 4-3 b.Knowledge-sharing Approaches (KSA) Variables and Item Description

Variable name	Item
KSA 1 (C)	Writing down and documenting the insights that are gained during work.
KSA 2 (C)	Capturing in writing/audio/video the experience narrated by employees.
KSA 3 (C)	Recording important data, drawings and happening for future use.
KSA 4 (P)	Reviewing customer feedback in team/group meetings as a learning exercise.
KSA 5 (P)	Holding routine review meetings to discuss work progress and generate new ideas.
KSA 6 (P)	Sharing (by an employee) his/her learning and experiences with other employees after returning from an official trip.

4.9.3.3 Knowledge-sharing Process (KSP)

The knowledge-sharing process examines the employee's willingness to share their working skills and any new information they acquire with one another. The willingness to share is based on the individual, as in the Saudi culture the interpersonal trust factor is considered significant for sharing knowledge and information against harmful actions within the organisation.

This sub-factor of the knowledge-sharing process (KSP) contains two main elements:

- Collection (C): KSP1 (C), KSP2 (C), and KSP3 (C).
- Donation (D): KSP 4 (D), KSP5 (D), and KSP6 (D).

The items and variables in the survey questionnaire relation to knowledge-sharing process (KSP) are listed in Table 4-3c.

Table 4-3 c. Knowledge-Sharing Process (KSP) Variables and Items Description

Variable name	Item
KSP 1 (C)	I often share with my colleagues the new working skills that I learn.
KSP 2 (C)	I often share with my colleagues the new information I acquire.
KSP 3 (C)	I think that knowledge-sharing between employees is considered as something typical in my organisation.
KSP 4 (D)	My colleagues often share with me the working skills they know when I ask them.
KSP 5 (D)	Staff in my organisation often exchange knowledge of working skills and information.
KSP 6 (D)	My colleagues often share with me the information they know when I ask them.

4.9.3.4 Intellectual Capital (IC)

Intellectual capital identifies the ability of employees to accomplish their job successfully and whether they have excellent professional skills in their job functions. In addition to this, employees developing new ideas will enhance their organisation's operational productivity more efficiently. New development and change in the organisation helps in problem-solving and collaboration and in maintaining long-term relationships with customers and stakeholders. This sub-factor of the knowledge-sharing process (KSP) contains three main elements:

- Human capital (HC): IC1 (HC), IC2 (HC), and IC3 (HC).
- Structural capital (SC): IC4 (SC), IC5 (SC), and IC6 (SC).
- Relational capital (RC): IC7 (RC), IC8 (RC) and IC9 (RC).

The items and variables in the survey questionnaire relation to intellectual capital (IC) are listed in Table 4-3d.

Table 4-3 d. Intellectual Capital (IC) Variables and Items Description

Variable name	Item
IC 1 (HC)	Employees hold suitable work experience for accomplishing their job successfully in my organisation.
IC 2 (HC)	Employees in my organisation have excellent professional skills, particularly in their job functions.
IC 3 (HC)	The employees in my organisation often develop new ideas and knowledge.
IC 4 (SC)	The overall operations of my organisation are very efficient.
IC 5 (SC)	My organisation responds to changes very quickly.
IC 6 (SC)	My organisation has an easily accessible information system.
IC 7 (RC)	My organisation discovers and solves problems through intimate communication and effective collaboration.
IC 8 (RC)	My organisation maintains long-term relationships with customers and stakeholders.
IC 9 (RC)	My organisation has a stable and good relationship with its strategic partners.

4.9.4 Organisational Success (OS)

The success of an organisation is measured through the operational and financial performance of the organisation in relation to the organisation's key competitors. This final main factor of organisational success (OS) contains two main sub-factors:

- Operational performance (OP): OS1 (OP), OS2 (OP), OS3 (OP) and OS4 (OP).
- Financial performance (FP): OS5 (FP), OS6 (FP), OS7 (FP) and OS8 (FP).

The items and variables in the survey questionnaire relation to organisational success (OS) are listed in Table 4-4.

Table 4-4 Organisational Success (OS) Variables and Items Description

Variable name	Item
OS 1 (OP)	The customer satisfaction of my organisation is better than of our key competitors.
OS 2 (OP)	The productivity of my organisation is better than that of our key competitors.
OS 3 (OP)	The responsiveness of my organisation is better than that of our key competitors.
OS 4 (OP)	The quality development of my organisation is better than that of our key competitors.
OS 5 (FP)	The return on investment of my organisation is better than that of our key competitors.
OS 6 (FP)	The return on assets of my organisation is better than that of our key competitors.
OS 7 (FP)	The return on sales of my organisation is better than that of our key competitors.
OS 8 (FP)	The profit growth of my organisation is better than that of our key competitors.

Table 4-5 Alignment for Construct, Dependency, Research Questions and Indicators of Existence

Variables	Hypothesis	Research questions	Indicators of existence	Survey questions
Organisational culture	***H1a:*** *There is a positive relationship between certain aspects of organisational culture (interpersonal trust, communication and technology support) and knowledge-sharing types (explicit and tacit) in Saudi IT organisations.* ***H1b:*** *There is a positive relationship between certain aspects of organisational culture (interpersonal trust, communication and technology support) and knowledge-sharing approaches (personalisation and codification) in Saudi IT organisations.*	**RQ1:** How does organisational culture influence knowledge environment in the organisational success of information technology firms in Saudi Arabia? **a.** From an employment perspective. **b.** From an executives and managers perspective.	1. Creating a successful organisational culture within the knowledge environment to enhance interpersonal trust. • Trust must be determined between the executive level and the managerial level. • Trust between Saudis and non-Saudis. • Trust to share feelings and perceptions. • Trust to share personal information and experiences. • The existence of trust through policies and rules to protect sharing knowledge against harmful actions. • The experiences and level of trustworthy relationships. 2. To create an excellent communication tool for the knowledge-sharing environment.	1)Organisational culture Questions from 1-12 (Employees) and 2)(Executives and managers) Questions 1-3

	H1c: *There is a positive relationship between certain aspects of organisational culture (interpersonal trust, communication and technology support) and knowledge-sharing process (collection and donation) in Saudi IT organisations.* ***H1d:*** *There is a positive relationship between certain aspects of organisational culture (interpersonal trust, communication and technology support) and intellectual capital (human, structural and relational) in Saudi IT organisations.* ***H1e:*** *There is a positive relationship between certain aspects of*		• Provide the necessary environment and resources to share knowledge with one another. • Provide certain tools to share knowledge with one another. 3. To explain the determination of organisational factors to encourage knowledge-sharing through employees technology supports. • Facilitate knowledge-sharing through managing knowledge repositories. • Store and retrieve organisational information/knowledge. • Support communication and collaboration around the organisation.	

	organisational culture (interpersonal trust, communication and technology support) and organisational performance (operational and financial) in Saudi IT organisations.			
Knowledge environment **a. Knowledge-sharing types**	***H2a:*** *There is a positive relationship between certain aspects of knowledge-sharing types (explicit and tacit) and knowledge-sharing approaches (personalisation and codification) in Saudi IT organisations.* ***H2b:*** *There is a positive relationship between certain aspects of knowledge-sharing types (explicit and tacit) and knowledge-sharing process (collection and*	**RQ2:** What are the main factors that influence the use of knowledge-sharing (knowledge-sharing type, knowledge-sharing approach and knowledge-sharing process) and organisational success?	4. Developing a knowledge environment that combines both knowledge-sharing aspects and intellectual capital factors. a. Knowledge-sharing types: Explicit and tacit: • Explicit knowledge-sharing through formal and systematic discussion. • Limitation of sharing explicit knowledge is high since it is easy to capture and codify. • Tacit knowledge is hard to articulate and is only shown in human actions.	3)Knowledge environment a)Knowledge-sharing types Questions 1-5 b)Knowledge-sharing approaches Questions 1-6 c)Knowledge-sharing process Questions 1-6

	donation) in Saudi IT organisations.		• Limitation of tacit knowledge-sharing is included in co-workers who are not willing to share knowledge. • Knowledge-sharing involves the transfer of knowledge from person or a group to another, which is considered a critical aspect for leveraging, transmitting and creating knowledge.	
b. Knowledge-sharing approaches			b. Knowledge-sharing approaches: • Codification is significant to avoid knowledge loss. • Codification is one of the tools of knowledge transferability. • Personalisation of knowledge is significant when considering transferability.	
c. Knowledge-sharing process			c. Knowledge-sharing process: • Sharing new working skills. • Sharing new acquired information.	

			• Sharing can be a normal attitude in the organisation. • Knowledge-sharing of best practices and experiences.	
d. Intellectual capital	***H3a:*** *There is a positive relationship between certain aspects of knowledge-sharing types (explicit and tacit) and intellectual capital (human, structural and relational) in Saudi IT organisations.*	**RQ3:** Towards the success of Saudi information technology firms the following questions are addressed: **a.** How does knowledge-sharing type (explicit or tacit) impact on intellectual capital factors (human, structural and relational)?	5. Knowledge-sharing is significant in order to utilise knowledge to develop intellectual capital. a. Human capital: • The organisation contains the sum of employees' knowledge, skill and innovativeness. • The organisation values the relationship between internal intellectual resources and external stakeholders. • Knowledge-sharing improves the organisations performance through human capital. b. Structural capital: • The organisation relates to the relationship between the	d)Intellectual capital Questions 1-9
	H3b: *There is a positive relationship between certain aspects of knowledge-sharing approaches (personalisation and codification) and intellectual capital (human, structural and*	**RQ3: b.** How do knowledge-sharing approaches (codification and personalisation) impact on intellectual capital factors (human, structural and relational)?		

	relational) in Saudi IT organisations.		individual and the knowledge embodied from the product and services. • Structural capital is the organisation's intangible asset. • Strategic assets that are embodied from information systems and databases. c. Relational capital: • The organisation provides a process between individuals and certain activities. • Trust is one of the basic components of relational capital • It also refers to the learning capabilities.	
	H3c: *There is a positive relationship between certain aspects of knowledge-sharing process (collection and donation) and intellectual capital (human, structural and relational) in Saudi IT organisations.*	**RQ3: c.** How does the knowledge-sharing process (collection and donation) impact intellectual capital factors (human, structural and relational)?		
Organisational success	***H4:*** *There is a positive relationship between certain aspects of intellectual capital (human, structural and relational) and organisational*	**RQ4:** How does intellectual capital influence the features of organisational success in terms of operational and financial performance?	6. Organisational success is evaluated through its performance from operational and financial perspective: a. Operational performance	4)Organisational Success Questions 1-8

	performance (operational and financial) in Saudi IT organisations.		• Knowledge is accumulated to facilitate the firms operational performance • Knowledge-related competence and organisational performance can be enhanced by effective knowledge-sharing • Knowledge-sharing or integration that combines scattered knowledge to enhance innovation, creativity and ultimately achieve performance b. Financial performance • Organisation can bring knowledge resources together into a driving force of financial performance • Information-sharing within organisations and between organisations will help the organisation's members identify critical problems and lead to a better product quality	

			improvement and financial performance • Knowledge-sharing leads to the improvement of business processes, product and service offerings of a firm, and a better operational performance.	
		RQ5: How do organisational culture and knowledge environment influence the organisational success for Saudis and non-Saudis in Saudi Arabia's IT firms?		Refer to Chapter 7 (Section 7.10)

4.10 Pilot Study

The validity of the survey and interviews was determined through a questionnaire draft for both the survey instrument and interview questionnaire which, was revised by the author's supervisor and co-supervisor, who both gave comments and suggestions during a one-to-one consultation. The researcher then submitted the required ethics forms including consent forms clarifying the confidentiality, participant's rights and statement of the ethical conduct of this research to their university's ethics committee. The researcher received approval from the University of Technology Sydney (UTS) Human Research Ethics Committee (HREC).

4.11 Sample and Sample Size

A realistic sampling method was used and the survey was distributed to employees in IT organisations in the Kingdom of Saudi Arabia's three main regions (west, middle and east). The time of distribution was between 23 July 2017 and 23 October 2017. No direct method in the literature was defined for the survey complexity and sample size; however, Bandalos (2014) and Forero, Maydeu-Olivares and Gallardo-Pujol (2009) su ggest that the sample size should range between 200 and 500 participants and this study had 500 participants for the survey questionnaire.

4.12 Data Collection for the Quantitative Method

The data was collected through the formal distribution of the survey, which was the main data collection instrument for this study. An English version of the survey questionnaire was distributed among employees and managers in IT organisations in Saudi Arabia. The survey used a five-item Likert scale to obtain the managers and employee's level of agreement with the questions. In addition to this, three open-ended questions were included in the questionnaire. Following the survey and in order to validate the results, 13 interviews were also conducted in English for executives and managers using an open question technique. These interviews are the case studies of the research.

4.13 Survey Administration

The survey was distributed to employees who worked in selected IT organisations in Saudi Arabia between 23 July 2017 and 23 October 2017. The questionnaire was distributed as a hard copy to employees and managers and collected on the same working day, which assured the participants' full corporation and also that the researcher was there to answer questions if needed. A total of 37 organisations of different types (private, public, semi-public and non-profit) participated in the survey questionnaire. These organisations were selected randomly

from the top 1,000 firms listed by Saudi Arabia's Ministry of Labour. 1,500 survey questionnaires were distributed, and 500 fully completed surveys were returned to the researcher.

4.14 Data Analysis Statistical Methods

4.14.1 Phase A: Quantitative Data Analysis

The data methods are classified according to the aims of the study. The statistical methods chosen to analyse and evaluate the data collected from the survey are discussed in this section. A variant statistical approach was implemented quantitatively to analyse the data collected from the survey questionnaire. The three main stages of the quantitative analysis (Phase A) are discussed in the following sub-sections.

4.14.1.1 Descriptive Data Analysis

The descriptive data analysis used SPSS (Version 25.00) software to determine whether the data was ready to proceed with the multivariate data analysis step. This analysis helped examine each participants' profile and data screening by presenting the normality, standard deviation and standard error of the mean (explained in detail in Chapter 5 and the raw data is shown in Appendix B).

4.14.1.2 Measurement Scale Analysis

Measurement scale analysis was used in the survey questionnaire to identify the model construct through a reliability and validity analysis. In order to measure the reliability analysis, a Cronbach's alpha assessment measures the consistency of responses within the Likert scale measurement. In addition to this, an item-total correlation was used to assess each item fitted to its scale. The validity of the measurement scale was used for the factor analysis that has two sequential techniques: exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). EFA helps search for patterns in the data in case there is no or only little prior knowledge on how the variables are related to one another, while the CFA tests the hypothesis of existing theories and concepts (Hair Jr et al., 2016). However, in this study only CFA is utilised because it is the best known technique for testing how well a pre-determined (hypothesis) factor structure matches the actual data (Hair Jr et al., 2016). The CFA analysis results found by using SPSS and more detailed results of the measurement scale analysis are

presented in Chapter 6 and the CFA original model from the software is shown in Appendix C.

4.14.1.3 Structural Equation Modelling (SEM)

The structural equation modelling (SEM) technique is a casual modelling approach which aims to verify the variance of each dependent construct (Hair, Ringle & Sarstedt, 2011). SEM is well known for its factor analysis because it integrates path analysis and factor analysis by involving both processes of validating the measurement model and covering the structural model after the CFA goes through the path analysis (Cabrera-Nguyen, 2010). Chapter 7 presents the SEM analysis, answering the final research questions which differentiate the SEM models for both the Saudi and non-Saudi samples. The AMOS original models and correlations are shown in detail in Appendix D.

4.14.2 Phase B: Qualitative Data Analysis

4.14.2.1 Analysis Approach

The main purpose of this analysis was to qualitatively validate the research model, which was assessed and refined from the preceding model assessment stage. The analysis guaranteed that the model adequately represented the actual phenomenon within the Saudi Arabian IT organisational industry.

In this study, a case study research approach was developed based on a qualitative analysis used in case study research: design and methods (Yin, 2013). It is a preferred strategy for the nature of a research model that cannot be covered by the statistical phase because the main objective of the research is purposive rather than statistical. In order to implement the case studies, a developed model template presented the outcomes of each case and determined whether the findings and results are reliable (Yin, 2013). Then, a thematic analysis approach was implemented based on Braun and Clarke's (2006) technique in order to analyse the open questions presented in the survey questionnaire. The qualitative analysis is explained in detail in Chapter 8.

4.14.2.2 Case Study Design

According to Yin (2013), case study design can be divided into a single case study or a multiple case study. The single case study provides an intensive description of a single phenomenon and

is suitable for studying critical cases or unique conditions. A multiple case study includes more than one case study. A multiple case study is considered expensive and time consuming and follows a replication logic where the study either predicts similar results or has contrasting results. This study embrace a multiple case study approach since replication logic is used in order to achieve analytical generalisation. Moreover, case studies are classified into three different segments. First, exploratory case studies focus on theory and/or hypothesis development. Second, descriptive case studies focus on findings that needs to be described based on information gathered. Finally, explanatory case studies are based on concepts and hypothesis testing. Explanatory case studies were implemented in this study in order to validate the research model, according to Yin's (2013) assessment. The explanatory approach not only validates the research model but also revises the concept of hypothesis to test again after the quantitative analysis assessment.

4.14.2.3 Survey Questionnaire Open Questions

Since the survey questionnaire contained both closed and open questions, a thematic analysis approach is used in the qualitative Phase B to evaluate the open questions. Braun and Clarke (2006) state that thematic analysis is the process of identifying patterns or themes within qualitative data. This type of qualitative approach is considered more of a method than a methodology as it is not tied to a particular epistemological or theoretical perspective. This makes it a very flexible method and one that provides a considerable advantage given the diversity of work in this study.

4.14.3 Data Collection for the Qualitative Method

In this study, the documentation of interviews was the main source of information for the case study approach. According to Yin (2013), semi-structured interviews are adopted in order to maintain the flexibility of the interview guide to have a relevant line of enquiry. All of the interviews were held in Saudi Arabian IT firms were the researcher conducted a face-to-face interview with an executive or manager. The documentation of the interview was typed by the researcher during the interviewers because recording the interviews was not an option as none of the participants allowed the interviews to be recorded for personal reasons and no other documentation or notes of the interviews was made. The time frame of the interviews varied but, a total of 13 interviews was conducted between executives and managers in 13 different IT firms. The participants were advised that they would be anonymous in the thesis and they

had to sign a consent forms provided by the UTS Human Research Ethics Committee (HREC) before the interview could be conducted. The researcher also informed each participant that they could agree and disagree when answering the interview questions. The interview protocol guide is provided in Appendix E.

Qualitative data was also collected from the questionnaires. Three open questions provided in the survey questionnaire was completed by each participants and were hand written on the survey that was collected from the IT firms in Saudi Arabia. The answers to each open question were summarised in a separate document presented in Appendix H in order to help proceed with the thematic analysis approach in the qualitative Phase B.

4.14.4 Data Analysis

Analysing data is considered the heart of building theory from case studies analysis, which gathers evidence to meet the main objectives of the study and answer its main research questions. Yin (2013) states that case study analysis is considered one of the most difficult steps of analysis which is true because of the time frame needed in order to utilise and analyse the data in a presentable and clear way. Therefore, the data analysis in this study followed two main steps (Eisenhardt, 1989): a within-case analysis and a cross-case analysis. First, within-case analysis is a key feature for analysis identification. The information gained from this type of analysis provides insight on how the research model and its constructs are perceived within the Saudi Arabian IT context. Thus, each component includes a descriptive detail as well as the findings for each case and a qualitative rating for each factor and construct. However, the overall idea is for each case to stand alone as a unique entity. This process allows a set of patterns for each case to emerge before investigators push to generalise patterns across cases. In addition to this, it allows investigators to familiarise themselves with each case to accelerate cross-case comparison (Eisenhardt, 1989). A cross-case analysis will help look at the data in different ways and dimensions, which can then be compared with within-group similarities and intergroup differences. The dimensions can be identified by the research problem or existing literature. Bourgeois III and Eisenhardt (1988) sorted cases into various categories such as high versus low, which will be used in this study to help reveal important patterns of within-group similarities and across-group differences. For this study, the research model predicts pattern-matching compared to the actual patterns of constructs in the qualitative phase. The descriptive summary and examples of rating results of case studies are presented in Appendix F, the qualitative assessment rubrics are shown in Appendix G, and the thematic analysis for the

survey questionnaire's open questions is presented in detail in Appendix H. Finally, case studies, patterns of predicting matching and the thematic analysis of open questions are evaluated by the selected criteria and results are presented in Chapter 8.

4.15 Significance and Contribution

The research approach must be able to address the research problems through the application of effective means for the data collected. The research design must guide the researcher towards the purpose of the study and objectives. Identifying the constructs in the research model and coding each variable is a useful way to define the relationships between organisational culture, knowledge environment and organisational success. This chapter identifies factors for organisational success by establishing the role of the knowledge environment as a pivotal factor. The chapter then recounts existing literature on factors of organisational culture (interpersonal trust, communication, and technology support), knowledge environment (knowledge-sharing types, approaches and process) and intellectual capital (human, structural and relational) capital and organisational success (financial and operational) performance. The chapter establishes and proposes, theoretically, the relationship between organisational culture, knowledge environments and organisational success.

This research proposes a unified view of knowledge management and intellectual capital as two interdependent elements of an organisation's knowledge environment. These two elements (knowledge management and intellectual capital) are interdependent underlying mechanisms, which managers ought to consider when acknowledging the effects of organisational culture on organisational success. The chapter hypothesises a positive and significant relationship between the organisation's knowledge environment and its intellectual capital. The association builds on the fact that knowledge management represents the flow of knowledge in the organisation, while intellectual capital represents the stock of knowledge in an organisation. This chapter encourages researchers and practitioners to consider a reciprocated relationship between knowledge management and intellectual capital.

4.16 Chapter Summary

This chapter discussed the research design and methodology adopted for this study. The study follows a mixed-methods approach intended to strengthen and validate the findings of the study. The study thus involved two phases of data collection. The first phase involved a survey questionnaires of IT firms in Saudi Arabia. The survey generated quantitative findings on the variables of the study. The chapter also discusses the techniques employed during quantitative

data analysis in Phase A, which included descriptive data analyses, measurement scale analysis and PLS-SEM analysis. The chapter also presents the qualitative study, which occurred in Phase B of the study analysis. This phase of the study involved case study design, which used interviews for data collection. The chapter discusses the study approaches to qualitative data analysis for the case study research. These involved within-case analysis followed by cross-case analysis and a thematic analysis for the survey questionnaire's open questions. Chapter 5, the following chapter, analyses the first phase of the quantitative analysis for the study.

Chapter 5: Descriptive Data Analysis

5.1 Introduction

The previous chapters of the thesis introduced the main aspects of the literature review, outlined the scope of the research and described the main development of the research instrument. This chapter covers the preliminary phase of the quantitative methods of the study, which is the descriptive data analysis. The aim of this chapter is to investigate how the criteria of information in the literature was appropriate for the statistical techniques in this analysis stage. Section 5.1 introduces the chapter. Section 5.2 outlines the details of the survey questionnaire and describes the respondents' profiles. In Section 5.3, the results of normality and outliers of the data set, standard deviation and standard error of the mean are represented. The initial findings are provided in Section 5.4 and Section 5.5 describes the significance and contribution of this phase of analysis. Finally, Section 5.6 concludes the chapter with a summary.

5.2 Saudi Arabia Technical Profession Population

In the final quarter of 2016, the population of the Kingdom of Saudi Arabia was 32.5 million (General Authority Statistics, Kingdom of Saudi Arabia, 2016). Of this, one-third of the population (12.3 million) are technical employees, of which 4.1 million were Saudi males, 8.4 million were Saudi females, 6.7 million were non-Saudi males, and 6.4 million are non-Saudi females (shown in Figure 5-1).

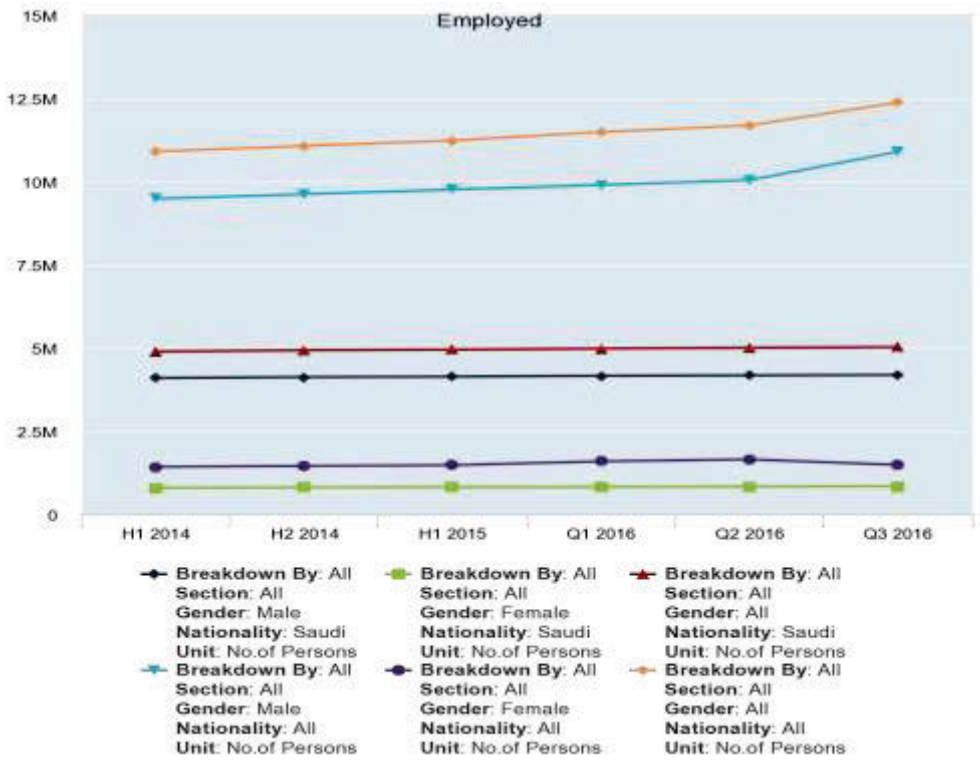


Figure 5-1 Saudi Arabia's Technical Profession Population

5.2 Survey Questionnaire and Respondents' Profiles

5.2.1 Survey Questionnaire

As illustrated in Chapter 4, the survey questionnaire is the most reliable way to collect data for this study because it is the fastest method of data collection. The survey questionnaire was distributed to employees in IT organisations in the Kingdom of Saudi Arabia's three main regions (west, middle and east). The time of distribution was between 23 July 2017 and 23 October 2017, which allowed three months for the distribution and collection of the surveys. The chosen organisations were 37 companies selected from the top 1,000 firms listed in Saudi Arabia's Ministry of Labour. A total of 1,500 questionnaires were distributed, of which 500 were completed and returned and used for the study and analysis phase. Each organisation was visited by the researcher, who distributed the survey questionnaire and then waited at the organisation until the surveys were completed and returned, which helped in obtaining a significant range of 500 participants in a relatively short period of time.

5.3 Respondents' Profiles

An evaluation of the respondents' profiles was completed to reveal the ability of the sample to sufficiently exhibit the survey population. Respondents were categorised as follows:

- The size of organisation, number of employees and job titles;
- Type of organisation and organisation's region of operations; and
- Employee's education level, gender, language, years of experience overall, years at the organisation, nationality and length of time they had lived in Saudi Arabia if applicable.

Figure 5-2 shows the respondents' profile for the first section of the survey questionnaire: their organisation's regional location (Background Information, Appendix A).

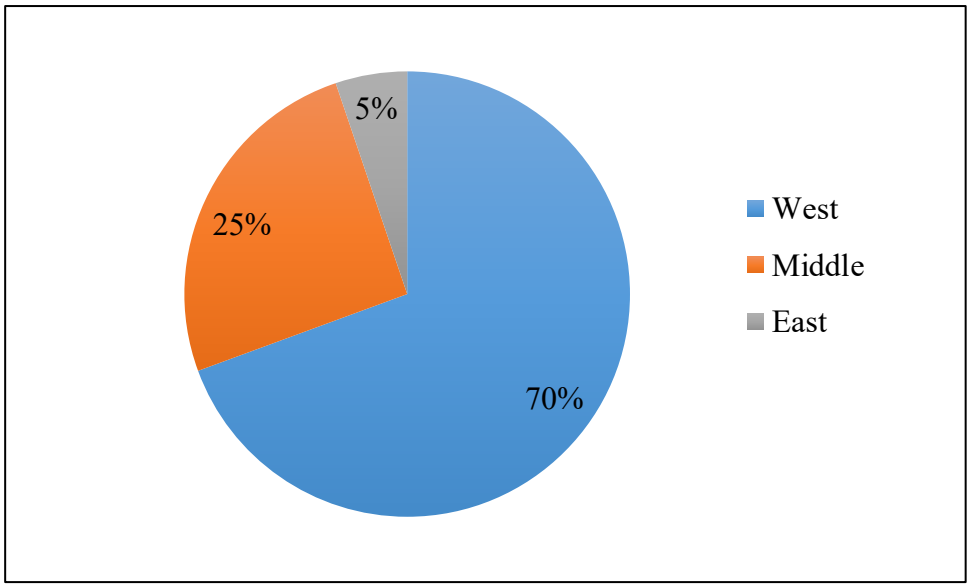


Figure 5-2 Organisation Regional Location

The results showed that 99.4% (n = 497) companies were located in Saudi Arabia, with only three located outside the Kingdom (0.6%). The companies were predominantly located in the west region (n = 347, 69.4%), followed by the middle region (n = 127, 25.4%). Only 5.2% (n = 26) of companies were located in the east region (Figure 5-2).

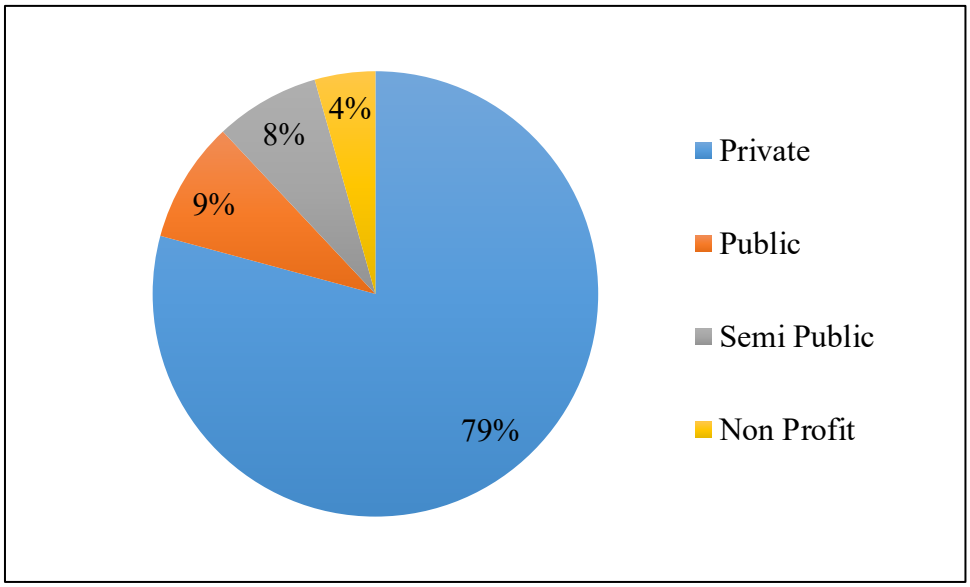


Figure 5-3 Type of Organisation

Mostly companies were private (n=396.79.2%); however, 8.8% were public, 7.6 were semi-public and 4.4% were non-profit (Figure 5-3). Overall, 16.2% of companies (n = 81) had 101–200 employees, with 8% (n = 120) having 100 or fewer employees and 54.8% (n = 299) had 201 or more employees (Figure 5-4).

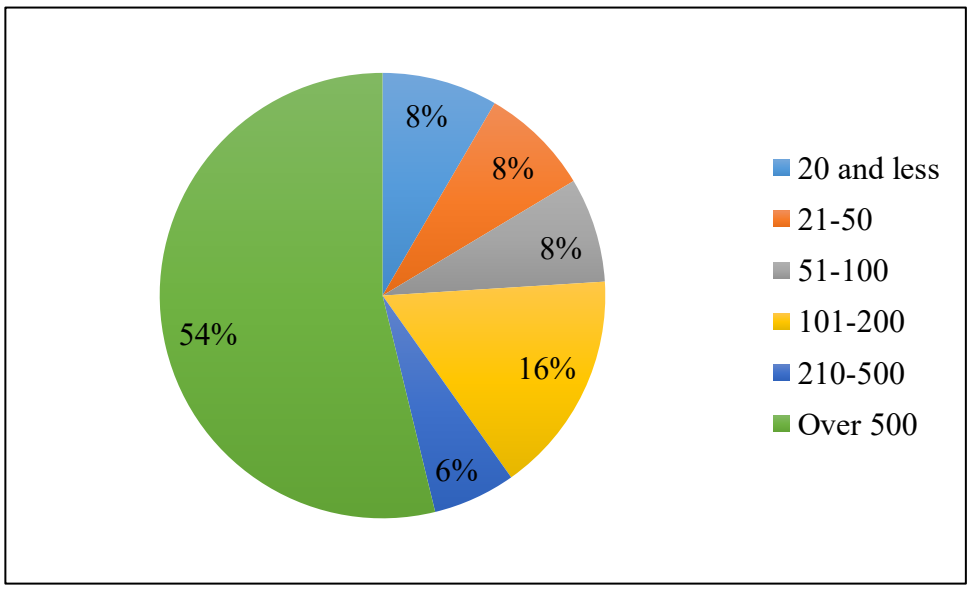


Figure 5-4 Number of People working in the Organisation

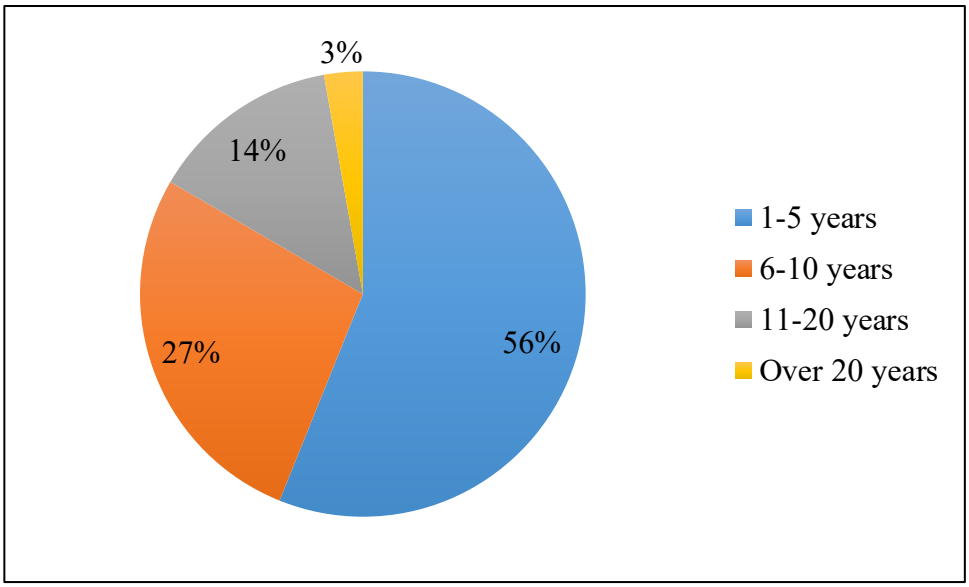


Figure 5-5 Number of Years Worked in the Organisation

In respect to years with the company (shown in Figure 5-5), the majority of respondents had spent 1–5 years with the company (56.1%, n = 280), with only 14 (2.8%) having more than 20 years with the company. The remaining 205 (n = 41.1%) had 6–20 years of work with the company.

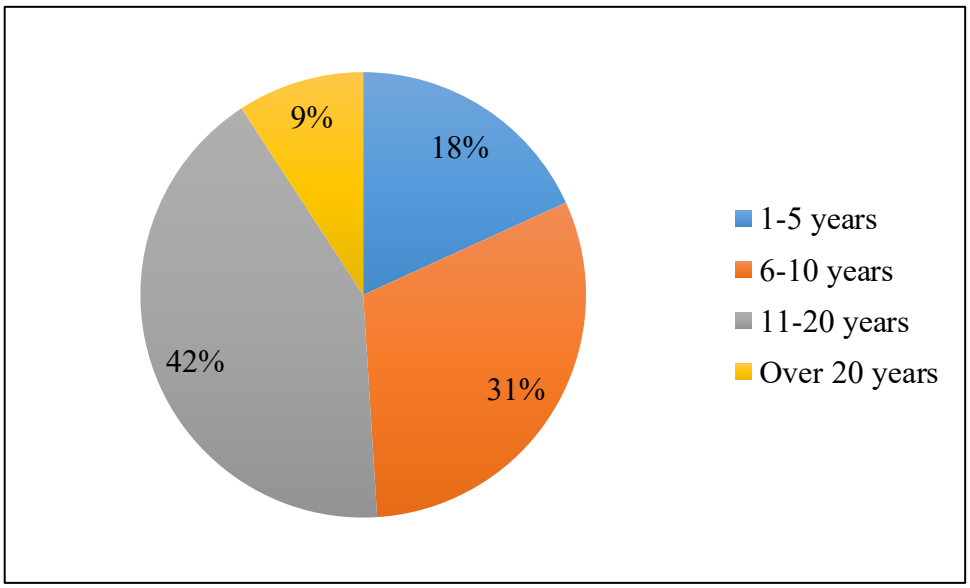


Figure 5-6 Overall Years of Working Experience

Interestingly, 9.2% of respondents (n = 46) had over 20 years' of work experience in total, with the majority of respondents (n = 363, 72.6%) having 6–20 years, and only 18.2% (n = 91) having 5 years or less of working experience as shown in (Figure 5-6).

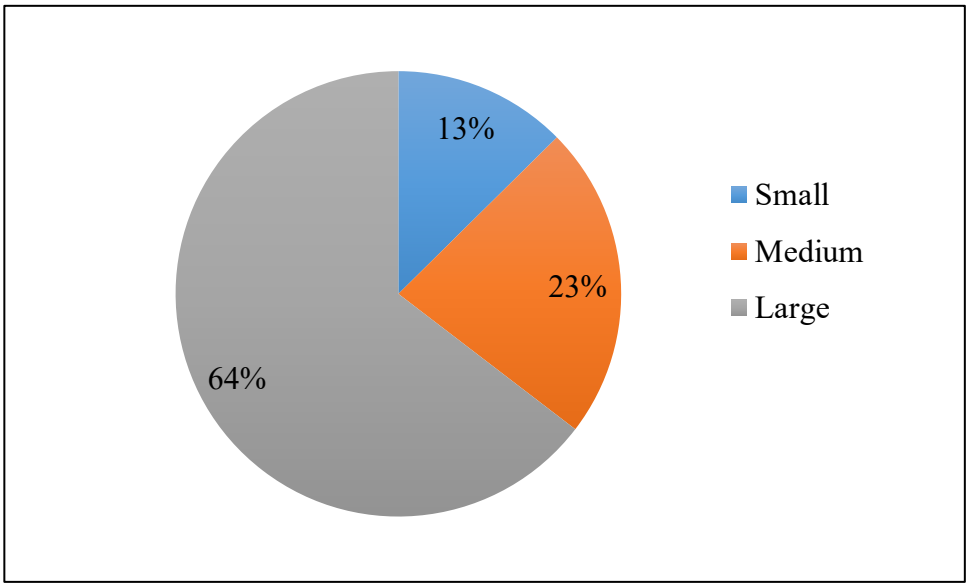


Figure 5-7 Size of Organisation

Figure 5-7 shows the size of the organisation, where 13% are small (n=65), 23% are medium (n=115) and 64% are large (n=320).

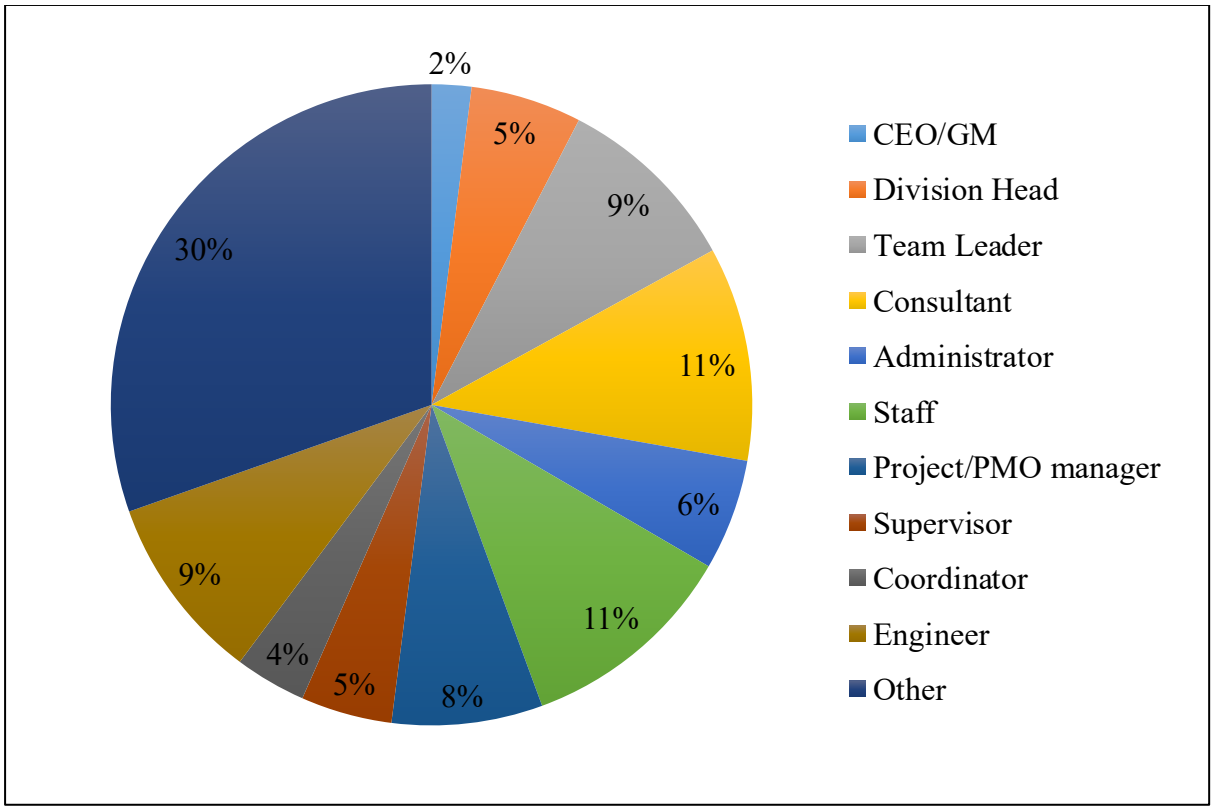


Figure 5-8 Job Title

Figure 5-8 shows the job titles of respondents. The biggest percentage of respondents listed "other" (30.4%). Over 10% listing consultant or "staff" as their title and 5-10% listed the job titles of division head, team leader, administrator, project/PMO manager or engineer. The least amount of respondents (less than 5%) listed their job title as CEO, supervisor or coordinator.

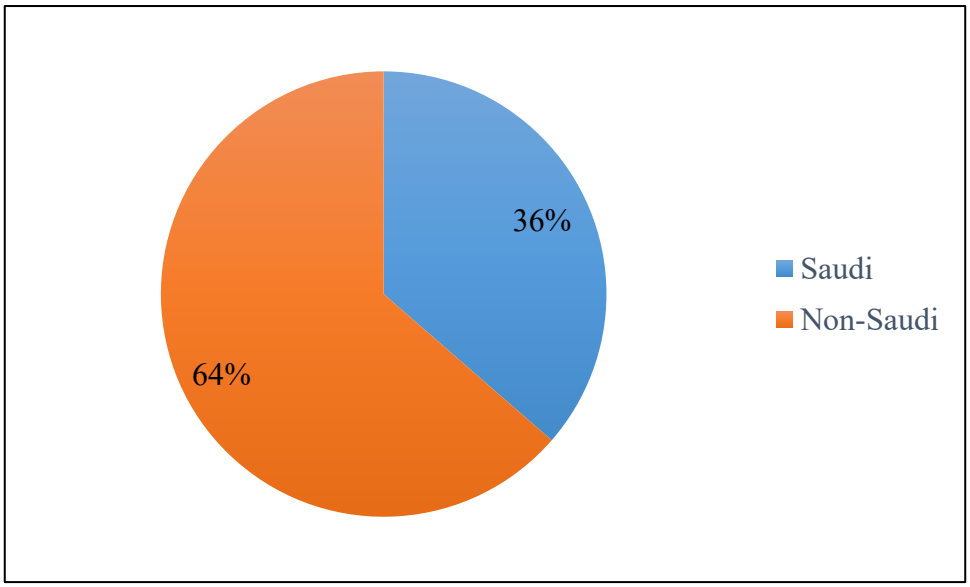


Figure 5-9 Nationality

Figure 5-9 shows that the majority of respondents were non-Saudi (n = 318, 63.6%). Figure 5-10 shows that the majority of respondents (n = 160, 52.8%) had lived in Saudi Arabia for more than 10 years. 61 respondents (20.1%) had lived in Saudi Arabia for less than five years, with the remaining of 27.1% (n=82) having lived in Saudi for 5-10 years.

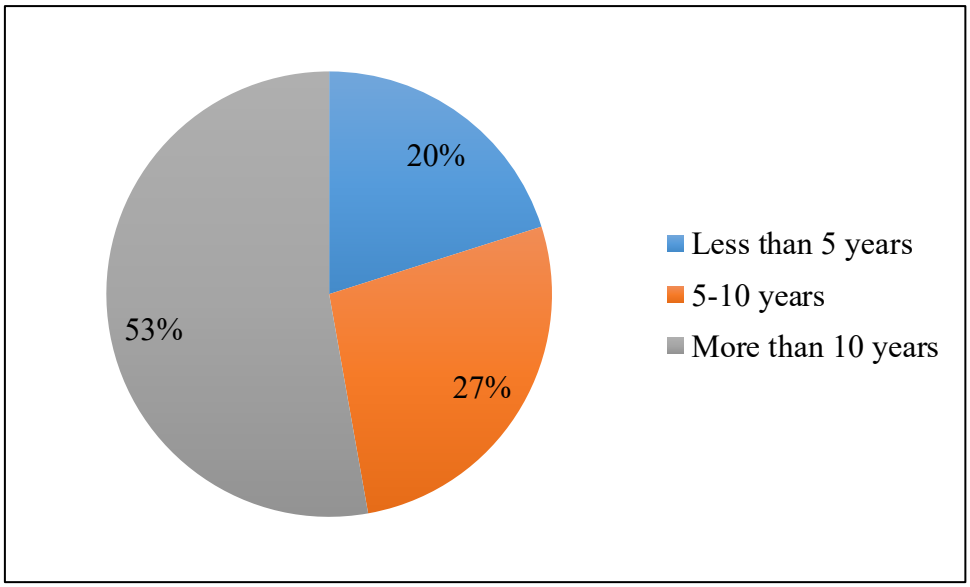


Figure 5-10 Total of Years Lived in Saudi Arabia

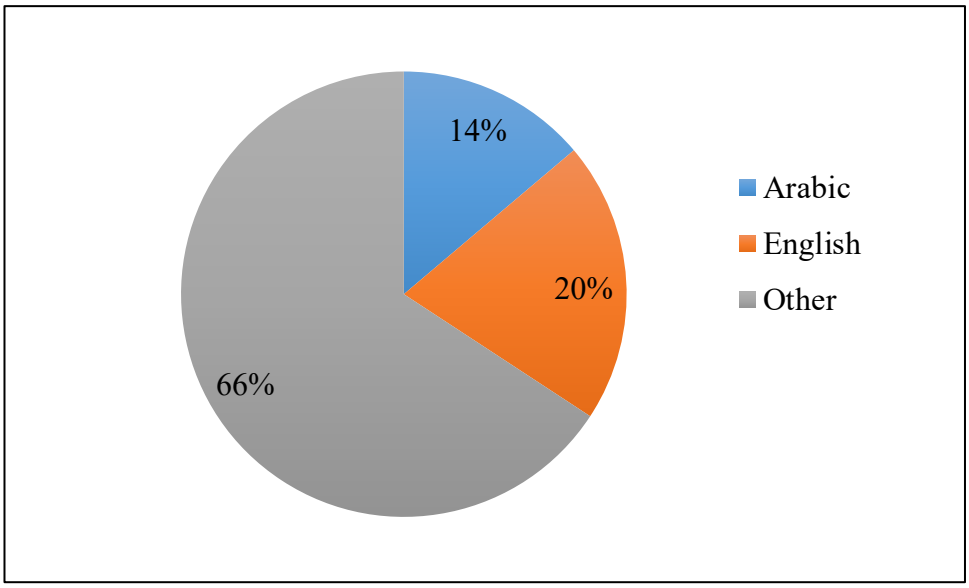


Figure 5-11 Language

Most respondents (n = 328, 65.7%) spoke a language other than English or Arabic at home, with 20.4% (n = 102) speaking English and 13.8% (n = 69) speaking Arabic (Figure 5-11).

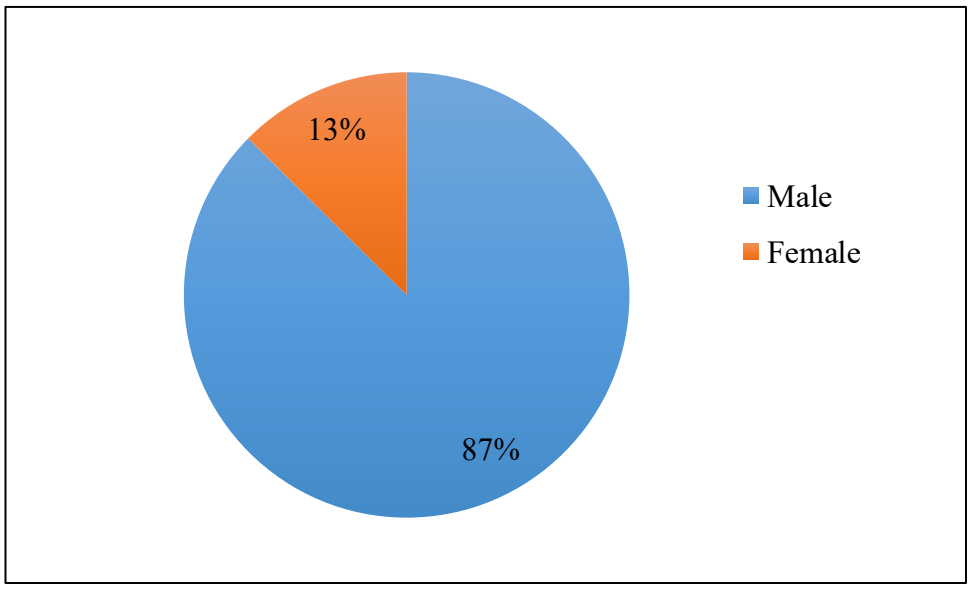


Figure 5-12 Gender

The majority of respondents were male (n = 437, 87.4%), as shown in Figure 5-12. This is unsurprising, as Saudi IT firms are highly populated with male employees than females, as shown in Figure 5-12.

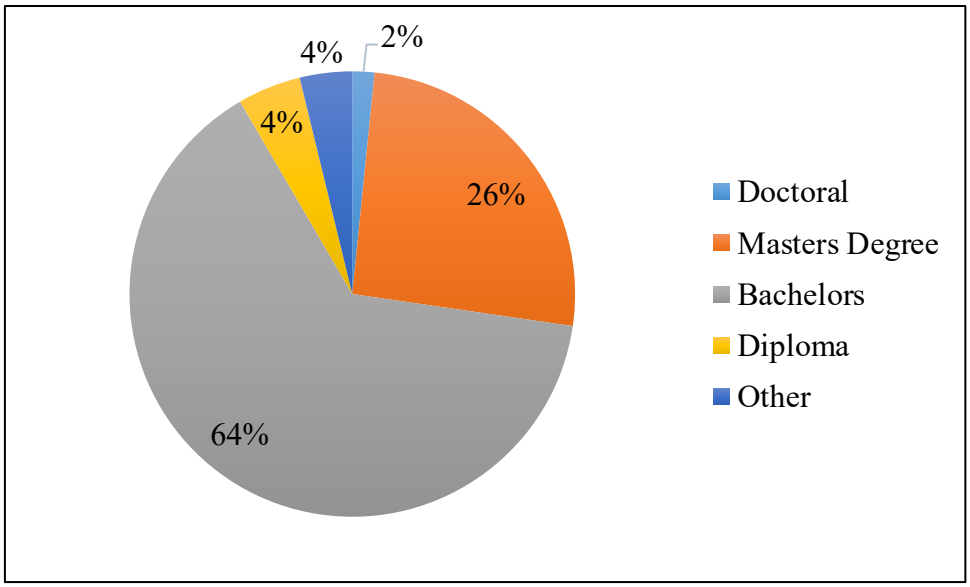


Figure 5-13 Educational Level

As shown in Figure 5-13, the majority of respondents hold at least a bachelor's degree (n = 321, 64.3%) or a master's degree (n = 128, 25.7%). There were 8 respondents (1.6%) with a doctoral degree and 23 with a diploma (4.6%). A final of 19 respondents (3.8%) listed "other" as their education.

5.3.1 Respondents' Sample Profile

Table 5-1 Respondents' Sample Profile

Category	Sub-Category	Frequency	Percentage	Cumulative percentage
Organisation's regional location	West	350	70%	70%
	Middle	125	25%	95%
	East	25	5%	100%
Type of organisation	Private	395	79%	79%
	Public	45	9%	88%
	Semi-public	40	8%	96%
	Non-profit	20	4%	100%
Number of people working in the organisation	20 and less	40	8%	8%
	21–50 people	40	8%	16%
	51–100 people	40	8%	24%
	101–200 people	80	16%	40%

	210–500 people	30	6%	46%
	Over 500 people	270	54%	100%
Number of years worked in the organisation	1-5 years	280	56%	56%
	6-10 years	135	27%	83%
	11-20 years	70	14%	97%
	Over 20 years	15	3%	100%
Overall years of working experience	1–5 years	90	18%	18%
	6–10 years	155	31%	49%
	11–20 years	210	42%	91%
	Overall 20 years	45	9%	100%
Size of the organisation	Small	65	13%	13%
	Medium	115	23%	36%
	Large	320	64%	100%
Job title	CEO/GM	20	2%	2%
	Division head	25	5%	7%
	Team leader	45	9%	16%
	Consultant	55	11%	27%
	Administrator	30	6%	33%
	Staff	55	11%	44%
	Project manager/PMO	40	8%	52%
	Supervisor	25	5%	57%
	Coordinator	20	4%	61%
	Engineer	45	9%	70%
	Other	150	30%	100%

Nationality	Saudi	180	36%	36%
	Non-Saudi	320	64%	100%
Total of years lived in Saudi Arabia	Less than 5 years	100	20%	20%
	5–10 years	135	27%	47%
	More than 10 years	265	53%	100%
Language spoken at home	Arabic	70	14%	14%
	English	100	20%	34%
	Other	330	66%	100%
Gender	Male	65	13%	13%
	Female	435	87%	100%
Educational level	Doctoral	10	2%	2%
	Master's degree	130	26%	28%
	Bachelor's degree	320	64%	92%
	Diploma	20	4%	96%
	Other	20	4%	100%

5.4 Preliminary Findings

5.4.1 General Assessment of Standard Deviations and Standard Errors of Means

This section defines the standard deviation of how well the mean signifies the collected data, where the standard error of the mean indicates how well a sample represents the population (Field, 2009). A small standard deviation indicates less dispersed data points around the mean where the data is sufficiently represented, while a large standard deviation shows the score clusters around the mean and that the mean is a poor representation of the data.

Moreover, standard errors show the variability of the sample mean. A small standard error shows that the sample mean is similar to the population mean, while a large standard error shows a high level of variation between the means of different samples and indicates that the mean is considered a poor presentation of the population.

In this study the standard deviation values of all of the variables are not large and the values of the standard error were small compared with the mean. Thus, the mean value can be used as a representation edge for each variable for the collected data and the small values of the standard error suggests the sample used in this study of 500 participants sufficiently represents the population.

5.4.2 Detailed Assessment Based on the Mean Values and their Effects

The previous section described the values of the standard deviation of all variables, which are clustered around the mean. Therefore, the mean values are determined in order to present all the responses of each variable. In this section the focus is the evaluation and interpretation of the mean values for all 49 variables, calculated from the entire sample of 500 participants in 37 IT firms in Saudi Arabia. The mean values are presented in the fallowing sections: Tables 5-2 (a) and (b) relate to the organisational culture (OC) constructs, Tables 5-2 (c) and (d) relate to only the executive and managers (EM) constructs, Tables 5-3 (a) and (b) relate to the knowledge-sharing types (KST) construct, Tables 5-4 (a) and (b) relate to knowledge-sharing approaches (KSA) constructs, Tables 5-5 (a) and (b) relate to the knowledge-sharing process (KSP) constructs, and Tables 5-6 (a) and (b) relate to the intellectual capital (IC) constructs. Finally, Tables 5-7 (a) and (b) relate to organisational success (OS) constructs, as described in Chapter 4. The interpretation of the mean values were measured with a five-point scale response format for all of the survey questionnaire variables. The value of five (5) describes the highest score where the value of one (1) indicates the lowest score; see Appendix B for more detail.

5.4.2.1 Organisational Culture (OC) Descriptive Statistics

All of the 12 variables associated with the organisational culture (OC) scale were perceived to be relatively medium, according to the mean values that ranged from 3.5540 to 4.0120 as presented in Table 5-2 (a). The highest mean value belonged to variable OC9 (TS) ("I think that the company provides various tools and technologies to facilitate knowledge-sharing and exchange experiences such as emails, intranet, groupware and cloud computing": 4.01), where the lowest value belonged to OC5 (C) ("My organisation's members are satisfied with the degree of collaboration": 3.55). To conclude, the average perception of the level of organisational culture for knowledge-sharing among employees of the sampled organisations was above the medium level.

Table 5-2 (a) Organisational Culture (OC) Descriptive Statistics

	Item	Mean	Std error	Std deviation	Variance
Organisational culture (OC)	OC1(T)	3.8240	0.04452	0.99549	0.991
	OC2(T)	3.7460	0.04097	0.91606	0.839
	OC3(T)	3.5820	0.04217	0.94290	0.889
	OC4(T)	3.6360	0.04367	0.97643	0.953
	OC5(C)	3.5540	0.04245	0.94915	0.901
	OC6(C)	3.9860	0.04185	0.93571	0.876
	OC7(C)	3.5700	0.04306	0.96278	0.927
	OC8(C)	3.6700	0.04680	1.04656	1.095
	OC9(TS)	4.0120	0.04199	0.93895	0.882
	OC10(TS)	3.9160	0.04287	0.95853	0.919
	OC11(TS)	3.8858	0.04286	0.95742	0.917
	OC12(TS)	3.7960	0.04262	0.95300	0.908

Table 5-2 (b) Organisational Culture (OC) Outcome

Research question	OC factors	OC descriptive statistical outcome	Source
RQ1: How does organisational culture influence knowledge environment in the organisational success of information technology firms in Saudi Arabia? **a.** From an employment perspective.	**Interpersonal trust (T):** - Sharing feelings and point of views.	The level of interpersonal trust is high where most employees do not hesitate to share their feelings and point of views with their colleagues, and OC1 (T) had the highest mean value of 3.82 as shown in Table 5-2 (a).	Li (2005)
	Communication (C): - Degree of collaboration. - Employees support the sharing of knowledge. - Encourage workshops, trainings and meetings to enhance communication skills	As per the level of communication where organisations encourage and support employees to share knowledge with one another, OC6 (C) has the mean value of 3.98 as shown in Table 5-2 (a).	Klitmoller and Laurin (2013); Pauali et al., (2016)
	Technology support (TS): - Tools used for knowledge-sharing. - Electronic storage used for knowledge-sharing. - Technological tools used for employees to collaborate for knowledge-sharing purposes.	Most of the IT organisations used different tools such as email, intranet, group ware and cloud computing to facilitate knowledge-sharing and exchange experiences, where the highest mean value was for variable OC9 (TS) = 4.01 as shown in Table 5-2 (a).	Rycraft and Kash, (2002), Dewett and Jones, (2001).

The mean values of the EM were above the medium level of 3.00, ranging from 3.7074 to 3.6989 (shown in Table 5-2 (c)). The highest mean value belonged to variable EM3 ("I think that the organisation provide technical tools that help executives and managers share knowledge with one another": 3.707), where the lowest value belonged to EM2 ("I think that executives and managers communicate with one another mainly through meetings": 3.698). Therefore, the average perception of the level for knowledge-sharing among the executives and managers of the sampled organisations was above the medium level.

Table 5-2 (c) Executives and Managers Only (EM) Descriptive Statistics

	Item	Mean	Std error	Std deviation	Variance
Executive and managers only (EM)	EM1	3.7045	0.04938	0.92646	0.858
	EM2	3.6989	0.04710	0.88366	0.781
	EM3	3.7074	0.05032	0.94411	0.891

Table 5-2 (d) Executives and Managers Only (EM) Outcome

Research question	Executives and managers only (EM) factors	EM descriptive statistics outcome
RQ1: How does organisational culture influence knowledge environment in the organisational success of information technology firms in Saudi Arabia?	**EM1:** Evaluating interpersonal trust relationship between executives and managers within the organisational culture.	Interpersonal trust relationship between executives and managers within the organisational culture mean value is high considerably at 3.70, as shown in Table 5-2(c).
b. From an executive and management perspective.	**EM2:** Executives and managers communicate with one another mainly through meetings.	Executives and managers communicate with one another through meetings with a mean value of 3.69, as shown in Table 5-2(c).
	EM3: Organisations provide technical tools that help executives and managers share knowledge with one another.	Most of the organisations contribute technical tools that help executives and managers to share knowledge with one

		another with a mean value of 3.70, as shown in Table 5-2(c).

5.4.2.2 Knowledge Environment (KE) Descriptive Statistics

The knowledge environment contains four main factors: knowledge-sharing types (KST), knowledge-sharing approaches (KSA), knowledge-sharing process (KSP) and intellectual capital (IC). These factors are divided into separate tables for descriptive statistics as shown below.

The mean values of the knowledge-sharing type's (KST) five variables were above the medium level of 3.00, ranging from 3.4260 to 3.7520, as shown in Table 5-3 (a). The highest mean value belonged to variable KST3 (E) ("Employees in my organisation are facilitated by IT systems invested for knowledge-sharing": 3.75), which indicates that the sampled organisations have a high significance for using IT systems to support knowledge-sharing within the organisation. However, the mean variable belonging to KST5 (T) has a moderate effect ("Employees in my organisation frequently collect knowledge from others based on their experience": 3.65). The lowest value belonged to KST2 (E) ("Employees in my organisation are frequently offered training and development programs": 3.42). Overall, the impact of this factor showed a moderate result on the sampled organisation and needs further statistical investigation.

Table 5-3 (a) Knowledge-sharing Types (KST) Descriptive Statistics

	Item	Mean	Std error	Std deviation	Variance
Knowledge-sharing types (KST)	KST1 (E)	3.4700	0.04306	0.96278	0.927
	KST2 (E)	3.4260	0.04531	1.01320	1.027
	KST3 (E)	3.7520	0.04262	0.95305	0.908
	KST4 (T)	3.6240	0.04177	0.93401	0.872
	KST5 (T)	3.6560	0.03988	0.89177	0.795

Table 5-3 (b) Knowledge-sharing Type (KST) Outcome

Research question	Knowledge-sharing types (KST) factors	KST descriptive statistics outcome	Source
RQ2a: What are the main factors that influence the use of (knowledge-sharing type) and organisational success?	**Explicit (E):** - Employees sharing existing reports and official documents with members of the organisations. - Employees are frequently offered various training and development programs. - Employees are facilitated with IT systems invested for knowledge-sharing.	The highest mean value belonged to KST3 (E) = 3.75, where employees in the IT organisations are facilitated by IT systems invested for knowledge-sharing as shown in Table 5-3 (a).	Wang, Wang and Liang, (2014)
	Tacit (T): - Employees share and collect knowledge based on their experience.	KST5 (T) has a moderate mean value of 3.65, which occurs that employees tend to collect knowledge from others based on their experience as shown in Table 5-3 (a).	

The mean values of the knowledge-sharing approaches (KSA) are six variables that were above the medium level of 3.00, ranging from 3.0480 to 3.5720, as shown in Table 5-4 (a). The highest mean value belonged to variable KSA5 (P) ("Holding routine review meetings to discuss work progress and generate new ideas": 3.57). However, the mean value with a moderate effect belonged to KSA4 (P) ("Reviewing customer feedback in team/group meetings as a learning exercise": 3.43). The lowest value belonged to KSA2 (C) ("Capturing in writing/audio/video the experience narrated by employees": 3.04). These results show that the

impact of this factor had a moderate result in codifying data through meetings and personalising the data through documenting for the sake of knowledge-sharing.

Table 5-4 (a) Knowledge-sharing Approaches (KSA) Descriptive Statistics

	Item	Mean	Std error	Std deviation	Variance
Knowledge-sharing approaches (KSA)	KSA1(C)	3.3120	0.04420	0.98824	0.977
	KSA2(C)	3.0480	0.04613	1.03142	1.064
	KSA3(C)	3.4260	0.04531	1.01320	1.027
	KSA4(P)	3.4329	0.04833	1.07966	1.166
	KSA5(P)	3.5720	0.04585	1.02514	1.051
	KSA6(P)	3.2200	0.05095	1.13938	1.298

Table 5-4 (b) Knowledge-sharing Approaches (KSA) Outcome

Research question	Knowledge-sharing approaches (KSA) factors	KSA descriptive statistics outcome	Source
RQ2b: What are the main factors that influence the use of (knowledge-sharing approaches) and organisational success?	**Codification (C):** - Documenting insights during work. - Using audio/video to capture the experience narrated by employees. - Recording important data and holding for future use.	The highest mean value for the codification variable belonged to KSA3 (C) which had a moderate mean value of 3.42 where employees tend to collect data through recording, drawings and happenings for future use as shown in Table 5-4 (a).	McMahon, Lowe and Culley (2004)
	Personalisation (P): - Reviewing customer feedback in group meetings as a learning exercise. - Holding routine meetings to discuss work progress and generate new ideas. - Employees sharing and learning experiences with others after returning from official trips.	KSA5 (P) has the highest mean value of 3.57 where employees hold routine review meetings to discuss work progress and generate new ideas as shown in Table 5-4 (a).	Lai, Wang and Chou (2009)

The mean values of the knowledge-sharing process (KSP) are six variables were above the medium level of 3.00, ranging from 3.5200 to 3.8920 as shown in Table 5-5 (a). The highest mean value belonged to variable KSP6 (D) ("My colleagues often share with me the information they know when I ask them": 3.89). The mean value with a moderate effect belonged to KSP4 (D) ("My colleagues often share with me the working skills they know when I ask them": 3.74). The lowest value belonged to KSP5 (D) ("Staff in my organisation often exchanges knowledge of working skills and information": 3.52). Thus, this factor of knowledge-sharing process shows a high moderate effect on both constructs of collection and donation of knowledge within the organisation.

Table 5-5 (a) Knowledge-sharing Process (KSP) Descriptive Statistics

	Item	Mean	Std error	Std deviation	Variance
Knowledge-sharing process (KSP)	KSP1 (C)	3.8180	0.04095	0.91573	0.839
	KSP2 (C)	3.8600	0.04005	0.89555	0.802
	KSP3 (C)	3.5740	0.04460	0.99725	0.995
	KSP4 (D)	3.7420	0.04052	0.90613	0.821
	KSP5 (D)	3.5200	0.04390	0.98159	0.964
	KSP6 (D)	3.8920	0.03924	0.87743	0.770

Table 5-5 (b) Knowledge-sharing Process (KSP) Outcome

Research question	Knowledge-sharing process (KSP) factors	KSP descriptive statistics outcome	Source
RQ2c: What are the main factors that influence the use of (knowledge-sharing process) and organisational success?	**Collection (C):** - Sharing with colleagues new working skills, new information and knowledge-sharing between employees is considered something typical within the organisation.	The highest mean value for the collection variable is KSP2 (C) is 3.86, which proves that most employees tend to share with their colleagues the information they acquire as shown in Table 5-5 (a).	Liao, Fei and Chen, (2007)
	Donation (D): - Sharing working skills with colleagues when they are asked. - Company staff exchange knowledge of working skills and information. - Colleagues often share information they know when they are asked.	The donation variable KSP6 (D) has the highest mean value of 3.89 where employees tend to share information they know with one another when they are asked in the organisation as shown in Table 5-5 (a).	

All 9 variables associated with the levels of intellectual capital (IC) scale were above the medium level of 3.00, ranging from 3.5300 to 3.9460 as shown in Table 5-6 (a). The highest mean value belonged to variable IC9 (RC) ("My organisation has a stable and good relationship with its strategic partners": 3.94). The mean value with a moderate effect belonged to IC2 (HC) ("Employees in my organisation have excellent professional skills particularly in their job functions": 3.71). The lowest value belonged to IC5 (SC) ("My organisation responds to changes very quickly": 3.53). Therefore, the assessment of IC constructs shows a high mean value for their three factors (human capital, structural capital and relational capital) within the organisation.

Table 5-6 (a) Intellectual Capital (IC) Descriptive Statistics

	Item	Mean	Std error	Std deviation	Variance
Intellectual capital (IC)	IC1 (HC)	3.7420	0.03993	0.89277	0.797
	IC2 (HC)	3.7160	0.03992	0.89271	0.797
	IC3 (HC)	3.5420	0.04359	0.97475	0.950
	IC4 (SC)	3.5960	0.04124	0.92222	0.850
	IC5 (SC)	3.5300	0.04655	1.04080	1.083
	IC6 (SC)	3.7480	0.04276	0.95620	0.914
	IC7 (RC)	3.6240	0.04138	0.92538	0.856
	IC8 (RC)	3.9140	0.04080	0.91229	0.832
	IC9 (RC)	3.9460	0.04120	0.92129	0.849

Table 5-6 (b) Intellectual Capital (IC) Outcome

Research question	Intellectual capital (IC) factors	IC descriptive statistics outcome	Source
RQ3: Towards the success of Saudi information technology firms the following questions are addressed: **a.** How does the type of knowledge-sharing (explicit and tacit) impact on intellectual capital factors (human, structural and relational)? **b.** How does knowledge-sharing approaches (codification and personalisation) impact intellectual capital factors (human, structural and relational)? **c.** How does knowledge-sharing process (collection and donation) impact intellectual capital factors (human, structural and relational)?	**Human capital (HC):** - Employees hold suitable work experience and excellent professional skills so they can accomplish their job successfully. - Employees tend to develop new ideas and knowledge.	IC1 (HC) has the highest mean value for the human capital of 3.74, where most employees in the IT companies tend to hold suitable work experience which helps them to accomplish their jobs successfully in the company as shown in Table 5-6 (a).	Wang, Wang and Liang (2014)
	Structural capital (SC): - Overall efficiency of the company operations. - Responds to changes quickly. - The company has easy access to information systems.	As per the structural capital the highest mean value is for IC6 (SC) is 3.74, where most of the IT companies had an easily accessible information system as shown in Table 5-6 (a).	
	Relational capital (RC): - Problem-solving through intimate communication and effective collaboration. - Maintaining long-term relationship with customers and stakeholders. - Developing a stable and good	For the relational capital, the highest mean value is for variable IC9 (RC) is 3.94, where most IT organisations had a stable and good relationship with their strategic partners as shown in Table 5-6 (a).	

	relationship with strategic partners.		

5.4.2.3 Organisational Success (OS) Descriptive Statistics

All 8 variables associated with the levels of organisational success (OS) scale were perceived to be relatively moderate, as the mean values ranging from 3.6640 to 3.8180 show in Table 5-7 (a). The highest mean value belonged to OS1 (OP) ("The customer satisfaction of my organisation is better than that of our key competitors": 3.81) whilst the lowest value belonged to variable OS8 (FP) ("The profit growth of my organsiation is better than that of our key competitors: 3.66"). Overall, it can be concluded that the average level of organisational success performance among the sampled firms has a moderate impact and can be used for further statistical investigation.

Table 5-7 (a) Organisational Success (OS) Descriptive Statistics

	Item	Mean	Std error	Std deviation	Variance
Organisational success (OS)	OS1 (OP)	3.8180	0.04296	0.96058	0.923
	OS2 (OP)	3.7840	0.03997	0.89384	0.799
	OS3 (OP)	3.7120	0.04259	0.95230	0.907
	OS4 (OP)	3.7440	0.04243	0.94882	0.900
	OS5 (FP)	3.7220	0.04046	0.90463	0.818
	OS6 (FP)	3.7020	0.03977	0.88926	0.791
	OS7 (FP)	3.6760	0.04041	0.90369	0.817
	OS8 (FP)	3.6640	0.04402	0.98440	0.969

Table 5-7 (b) Organisational Success (OS) Outcome

Research question	Organisational success (OS) factors	OS descriptive statistics outcome	Source
RQ4: How does intellectual capital influence the features of organisational success in terms of operational and financial performance?	**Operational performance (OP):** - Customer satisfaction. - Productivity of the company. - Responsiveness. - Quality development.	The highest mean value for the operational performance belongs to variable OS1 (OP) where most organisations agree that customer satisfaction is much more significant than their key competitors are as shown in Table 5-7(a).	**Organisational success:** Lee, (2001) **Operational performance:** Wang, Wang and Liang (2014)
	Financial performance (FP): - Return on investment. - Return on assets. - Return on sales. - Profit growth.	The highest mean value for financial performance of 3.72 belongs to variable OS5 (FP), where most of the organisations agree that their return on investment are better than their key competitors as shown in Table 5-7(a).	**Financial performance:** Wang, Wang and Liang (2014)
RQ5: How do the organisational culture and knowledge environment influence the organisational success for Saudis and non-Saudis in Saudi Arabia's IT firms?			Presented in Chapter 7 (Section 7.10)

5.5 Significance and Contribution

The research model developed in Chapter 3 identified the factors and sub-factors that could be used to draw a significant relationship between the input, process and output of the research model. The factors identified in the organisational culture (interpersonal trust, communication and technology support) had an impact on the relationships between managers and employees in the IT industry. Interpersonal trust is a major factor that helps in knowledge-sharing practices when individuals communicate with each other using different technology support tools. In the research model, the knowledge environment includes three factors of knowledge-sharing (types, approaches and process) and intellectual capital factors (human, structural, and relational). Then, the outcome of the organisational success, which was drawn from the literature review, has two sub-factors: (operational and financial) performance.

The descriptive statistical analysis helped in summarising the given sample in visual graphs and tables in order to provide an initial description of the given data in the survey questionnaire. In the above tables, the highest mean value for each main factor and sub-factor for the research model was taken under consideration to prove the significance of this factor within the research model. The first factor of organisational culture showed that all organisations provide various tools and technologies in order to facilitate knowledge-sharing and exchange experiences through emails, intranet, groupware and cloud computing for executives, managers and employees within the organisation. For knowledge-sharing types, the highest mean value proved that employees in the organisations are facilitated by IT systems that are held for knowledge-sharing purposes. For the knowledge-sharing approaches, holding routine review meetings to discuss work progress and generate new ideas showed a moderate result in codifying data through meetings and personalising the data through documenting for the sake of knowledge-sharing practices. For knowledge-sharing process, colleagues often share information they knew when asked. Thus, this factor of knowledge-sharing process showed a high moderate effect on the constructs of collecting and donating knowledge within the organisation. Moreover, the intellectual capital constructs shows a high mean value for their three factors (human, structural and relational) capital within the organisation. Finally, the organisational success factor showed a mixed result for both of their sub-factors. Operational performance had the highest mean value where customer satisfaction is considered better than that of key competitors within the organisation, whereas the financial performance had a low mean value, which means it varied from one organisation to another depending on their profit and annual growth.

5.6 Chapter Summary

This chapter presented the results for the descriptive data analysis of survey respondents. Descriptive data analysis was carried out to offer a comprehensive insight to the data collected through the survey questionnaire. First, examining the profiles of 500 respondents revealed that the opinions given by these respondents provided a reliable and unbiased information according to their personal backgrounds (job title, nationality, language, gender, and educational level, years of experience and organisation's location, type and size). The data set had an acceptable normal distribution without extreme outliers. A further assessment for the standard deviation and standard error of the mean indicated which of the mean values could be used as a representative score for each variable and that the sample used in the study sufficiently represented the population. The preliminary findings indicated that the overall levels of factors perceived by the respondents where moderate to high. Thus, it was considered suitable as an input for the subsequent measurement scale analysis, which is presented in the following chapter, Chapter 6.

Chapter 6: Measurement Scale Analysis

6.1 Introduction

The previous chapter, Chapter 5, discussed the preliminary stage of the quantitative phase of the study: the descriptive data analysis. In this chapter, the results of the analysis for the measurement scales are applied to the survey questionnaire to determine the constructs suggested in the presented research model. The model has seven constructs: organisational culture, executives and managers only, knowledge-sharing types, knowledge-sharing approaches, knowledge-sharing process, intellectual capital and, finally, organisational success. Each of these constructs are represented by measurement scales that were evaluated in order to establish the model's overall reliability. Each scale was also factor-analysed to reveal and verify the factor structures standing for each distinctive model construct. This is a significant step in order to evaluate the research model. Section 6.2 introduces the results and details of the analysis of scale reliability by evaluating interior constancy and item-total correlations. Section 6.3 represents the results and details of the confirmatory factor analysis (CFA) models that were utilised to verify the identified structure of the model construct in order to guarantee its validity and reliability. Finally, in Section 6.4, the main significance and contribution of the chapter is identified and then Section 6.5 summarises the chapter.

6.2 Scale Reliability

The data collected for the study used a survey questionnaire, which contained seven different scales relating to 7 main constructs and 15 sub-constructs. These were used throughout the survey questionnaire to measure the suggested structure of the research model as follows:

- **OC:** Interpersonal trust (T), communication (C) and technology support (TS).
- **EM:** Executives and managers only.
- **KE:** Knowledge environment
    - **KST:** Explicit (E) and tacit (T).
    - **KSA:** Codification (C) and personalisation (P).
    - **KSP:** Collection (C) and donation (D).
    - **IC:** Human capital (HC), structural capital (SC) and relational capital (RC).
- **OS:** Operational performance (OP) and financial performance (FP).

An analysis of scale reliability was delivered to guarantee the measurement scales are precisely detailed for the meaning of the models constructs through an evaluation of internal consistency

and item-total correlations. All assessment processes are shown in Section 6.2.1 and Section 6.2.2.

6.2.1 Internal Consistency

According to Kline (2011), internal consistency is the degree to which responses are consistent across the items of variables within the single measurement scale. It is measured by Cronbach's alpha coefficient, which indicates that if variables are heterogeneous, then they perform poorly in representing the measure. As a measurement tool, Hair et al. (2016) state that values of 0.60 to 0.70 are the minimum baseline of acceptability. Table 6-1 shows the Cronbach's alpha measurement scales for the 16 constructs used in the survey questionnaire. The values of the alpha coefficient of all the scales ranges from 0.753 to 0.886, which indicates a sufficient level of acceptability. As a result, the measurement scales appear to consist of a set of consistent variables for capturing the meaning of the model constructs.

Table 6-1 Cronbach's Alpha of Measurement Scales

N	Measurement Scale	Number of items	Cronbach's alpha based on standardised items	Cronbach's alpha
1.Organisational culture (OC)				
1	OC (T)	4	0.883	0.753
2	OC (C)	4	0.883	0.755
3	OC (S)	4	0.883	0.840
4	EM	3	0.803	0.802
2. Knowledge environment (KE)				
5	KST (E)	3	0.837	0.762
6	KST (T)	2	0.837	0.802
7	KSA (C)	3	0.867	0.783
8	KSA (P)	3	0.867	0.817
9	KSP (C)	3	0.858	0.821
10	KSP (D)	3	0.858	0.805
11	IC (HC)	3	0.893	0.797
12	IC (SC)	3	0.893	0.759
13	IC (RC)	3	0.893	0.817
3.Organisational success (OS)				

15	OS (OP)	4	0.920	0.886
16	OS (FP)	4	0.920	0.884

6.2.2 Item-total Correlations

Churchill (1979) states that item-total correlation is a correlation of an item with the combined score of all items forming the same set. Item-total correlation labelled as 'corrected' when it does not include the score of the particular item in the question during the calculation of the composite score. Nevertheless, when variables share a common score of the same construct, the score of each variable and the whole construct is highly correlated. That is why the analysis made to purify the measurement and remove unwanted items before defining the construct and those factors can be prevented rather than defined during this phase of analysis.

In SPSS, the value of the item-total correlation is corrected and the correlation excludes the score of a variable of interest when calculating the composite score (Koufteros,1999). However, Pallant (2010) considers that if the value of a corrected item-total correlation scale is lower than 3.00 shows that the variable is measuring something different from the entire construct. The results of item-total correlations presented in the below tables (Table 6-2 to Table 6-8) showed that all of the variables within each construct appear to measure the same concept, as their corrected item-total correlations were greater than 3.00.

Table 6-2 STF- Organisational Culture (OC) Variables

N	Variable description	Corrected item-total correlation	Cronbach's alpha
OC1 (T)	I don't hesitate to share my feelings and point of views with my colleagues.	0.420	0.767
OC2 (T)	In our company, a considerable level of trust exists between co-workers.	0.638	0.648
OC3 (T)	I think that the company fulfils sharing feelings and point of views between employees.	0.595	0.670
OC4 (T)	Most of my colleagues are people who I know and thus consider trustworthy.	0.556	0.691
OC5 (C)	My organisation's members are satisfied with the degree of collaboration.	0.536	0.706
OC6 (C)	I think that the organisation encourages and supports employees to share their knowledge with one another.	0.582	0.682

OC7 (C)	There is a willingness to collaborate across organisational units within the organisation.	0.649	0.643
OC8 (C)	My organisation provides certain workshops, trainings and meetings with individuals and groups in order to enhance their communication skills.	0.452	0.756
OC9 (TS)	I think that the company provides various tools and technologies to facilitate knowledge-sharing and exchange experiences such as emails, intranet, groupware and cloud computing.	0.635	0.815
OC10 (TS)	My organisation uses electronic storage to store and retrieve data/information/knowledge such as online databases and knowledge bases.	0.664	0.802
OC11 (TS)	I think that there are technological tools available to encourage employees to collaborate for knowledge-sharing purposes.	0.689	0.791
OC12 (TS)	I feel that a comfortable amount of knowledge-sharing technologies are available.	0.707	0.783

Table 6-6 STF-Executives and Managers Only (EM) Variables

N	Variable Description	Corrected item-total correlation	Cronbach's alpha
EM1	I think that having a trust relationship between executives and managers within the organisational culture are possible.	0.678	0.697
EM2	I think that executives and managers communicate with one another mainly through meetings.	0.659	0.720
EM3	I think that my organisation provides technical tools that help executives and managers share knowledge with one another.	0.609	0.772

Table 6-4 STF-Knowledge-sharing Types (KST) Variables

N	Variable description	Corrected item-total correlation	Cronbach's alpha
KST1 (E)	Employees in my organisation frequently share existing reports and official documents with other members of my organisation.	0.538	0.742
KST2 (E)	Employees in my organisation are frequently offered training and development programs.	0.601	0.673
KST3 (E)	Employees in my organisation are facilitated by IT systems invested for knowledge-sharing.	0.645	0.624
KST4 (T)	Employees in my organisation frequently share knowledge based on their experience.	0.670	0.000
KST5 (T)	Employees in my organisation frequently collect knowledge from others based on their experience.	0.670	0.000

Table 6-5 STF- Knowledge-sharing Approaches (KSA) Variables

N	Variable description	Corrected item-total correlation	Cronbach's alpha
KSA1 (C)	Writing down and documenting the insights that are gained during work.	0.633	0.693
KSA2 (C)	Capturing in writing/audio/video the experience narrated by employees.	0.633	0.692
KSA3 (C)	Recording important data, drawings and happening for future use.	0.597	0.731
KSA4 (P)	Reviewing customer feedback in team/group meetings as a learning exercise.	0.705	0.711
KSA5 (P)	Holding routine review meetings to discuss work progress and generate new ideas.	0.647	0.771
KSA6 (P)	Sharing (by an employee) his/her learning and experiences with other employees after returning from an official trip.	0.658	0.762

Table 6-6 STF- Knowledge-sharing Process (KSP) Variables

N	Variable description	Corrected item-total correlation	Cronbach's alpha
KSP1 (C)	I often share with my colleagues the new working skills that I learn.	0.738	0.690
KSP2 (C)	I often share with my colleagues the new information I acquire.	0.716	0.715
KSP3 (C)	I think that knowledge-sharing between employees is considered as something typical in my organisation.	0.583	0.853
KSP4 (D)	My colleagues often share with me the working skills they know when I ask them.	0.660	0.725
KSP5 (D)	Staff in my organisation often exchange knowledge of working skills and information.	0.621	0.771
KSP6 (D)	My colleagues often share with me the information they know when I ask them.	0.681	0.706

Table 6-7 STF- Intellectual Capital (IC) Variables

N	Variable description	Corrected item-total correlation	Cronbach's alpha
IC1 (HC)	Employees hold suitable work experience for accomplishing their job successfully in my organisation.	0.621	0.744
IC2 (HC)	Employees in my organisation have excellent professional skills, particularly in their job functions.	0.713	0.648
IC3 (HC)	The employees in my organisation often develop new ideas and knowledge.	0.595	0.776
IC4 (SC)	The overall operations of my organisation are very efficient.	0.634	0.631
IC5 (SC)	My organisation responds to changes very quickly.	0.631	0.629
IC6 (SC)	My organisation has an easily accessible information system.	0.512	0.761
IC7 (RC)	My organisation discovers and solves problems through intimate communication and effective collaboration.	0.576	0.840

IC8 (RC)	My organisation maintains long-term relationships with customers and stakeholders.	0.739	0.675
IC9 (RC)	My organisation has a stable and good relationship with its strategic partners.	0.698	0.718

Table 6-8 STF Organisational Success (OS) Variables

N	Variable description	Corrected item-total correlation	Cronbach's alpha
OS1 (OP)	The customer satisfaction of my organisation is better than of our key competitors.	0.764	0.847
OS2 (OP)	The productivity of my organisation is better than that of our key competitors.	0.761	0.850
OS3 (OP)	The responsiveness of my organisation is better than that of our key competitors.	0.757	0.850
OS4 (OP)	The quality development of my organisation is better than that of our key competitors.	0.720	0.864
OS5 (FP)	The return on investment of my organisation is better than that of our key competitors.	0.753	0.849
OS6 (FP)	The return on assets of my organisation is better than that of our key competitors.	0.748	0.851
OS7 (FP)	The return on sales of my organisation is better than that of our key competitors.	0.762	0.845
OS8 (FP)	The profit growth of my organisation is better than that of our key competitors.	0.730	0.859

6.3 Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) involves the specification and estimation of one or more hypothesised models of factor structure, each of which proposes a set of latent variables (factors) to account for covariance among a set of observed variables. Therefore, structural equation modelling (SEM) can be used to test the fit of a hypothesised model against the sample data (Bagozzi and Philips, 1982; Bentler, 1990; Bagozzi et., 1991). Moreover, CFA can be used to refine an existing conceptual perspective or support an existing structure (DiStefano and Hess, 2005) which is discussed in Sections 6.3.1– 6.3.3 below.

6.3.1 Assessment of Model Fit and Estimation Methods

The CFA technique has the ability to find how well the factor represents the data by examining the model fit indices. If the fit indices prove to be good, the model is consistently accepted. However, instead of rejecting fit indices that are not good, a model with unsatisfactory fit indices will be re-enhanced until it reaches a balanced index. Kenny (2014) identifies the following fit indices, which are used in this study:

- Chi-square (χ^2): One of the most basic indexes of absolute fit indices that includes in general the degree of freedom (*df*) value and (*p)* value. The Chi-square is statistically significant and affects the size of the correlation in the model in that the larger the correlation, the poorer the fit; therefore, alternative measures are developed such as *df* and *p* values.
- Common indices: Akaike's information criterion (AIC) is a comparative measure of fit and so it is meaningful only when two different models are estimated. A lower value indicates a better fit and so the model with the lowest AIC is the best fitting model. On the other hand, in the Bayesian information criterion (BIC), which increases the penalty of the sample, size increases and has a high value on parsimony (perhaps too high).
- Incremental fit indices: The comparative fit index (CFI) measures directly based on the non-centrality measure. If the index is greater than one, it is set at one and if it is less than zero it is set to zero. Another incremental fit index is the Tucker Lewis index (TLI), which is also called the non-normed fit index (NNFI).

Consequently, in order for the model to have an acceptable fit, all six indices must be measured against the following benchmarking criteria.

- $\chi^2 / df < 3.0$
- AIC, BIC, CFI and TLI > 0.90
- RMSEA < 0.08

6.3.2 Assessment of Construct Validity and Unidimensionality

The assessment of construct validity using CFA involved the examination of the convergent validity, which referrers to the extent to which the measured variables of a specific construct share a high proportion of variance in common. The discriminant validity refers to the extent to which a construct is truly distinct from other constructs (Hair, Ringle, & Sarstedt, 2011).

In CFA models, factor loadings can be noticed as regression coefficients in the regression of observed variables on latent variables. On the first-order level of measurement models, the standard factor loadings of observed variables (items) on latent variables (factors) are estimate s of the validity of the observed variables. The larger the factor loadings or coefficients, as compared with their standard errors and expressed by the corresponding *e*-values, the stronger the evidence that the measured variables or factors represent the underlying constructs (Bollen, 1989). The assessment of the convergent validity focuses on the magnitude of the standardi sed factor loadings and their significance level. As a guideline, the factor loading should be greater than 0.5 (Hair, Ringle, & Sarstedt, 2011).

6.3.3 Confirmatory Factor Analysis Results

CFA was conducted on each construct using the AMOS (Version 25.00) software. The results of each construct are presented in Tables 6-9 to 6-13. As mentioned earlier, the factor loading *z-value* is the significance level for each variable of R^2 and provided a measure with which to assess the reliability of the variables. The value of the correlation between the factors provided as indication of the discrimination validity. The model fit indices were also addressed for the purpose of unidimensionality (see Appendix C for more details)

6.3.3.1 Organisational Culture (OC) CFA Results for the STF Construct

The CFA results of the STF constructs organisational culture (OC) (interpersonal trust (T), communication (C) and technology support (TS)) are presented in Table 6-9. The model (Figure 6-1) shows an adequate fit indices χ^2 = 197.49, *df* = 51, AIC = 14309.93, BIC = 14474.22, CFI = 0.94, TLI = 0.92, RMSEA = 0.08. The *z-value* for all items to be significant are at less than 0.001, which is good, and most of the R^2 values were either greater than or close to 0.50, indicating the reliability of the variables. All of the correlation coefficients between each pair of factors must range between -1 and +1, and for the three-factor model of OC range from 0.55 to 0.86 and were less than 0.081, thus supporting the discriminated validity of the construct. Finally, the model fit indices proved to be good and unidimensionality was established.

Table 6-9 Organisational Culture (OC) CFA Results for the STF Construct

Factor/variable	Factor loading	*z*-value	R^2	Correlations between factors
(F1) Interpersonal trust				
OC1	0.45	11.21*	0.80	F1 – F2 = 0.86
OC2	0.76	29.71*	0.42	
OC3	0.75	29.29*	0.43	
OC4	0.68	22.77*	0.54	
(F2) Communication				
OC5	0.68	24.07*	0.53	F2 – F3 = 0.75
OC6	0.66	22.35*	0.56	
OC7	0.76	31.33*	0.42	
OC8	0.57	16.28*	0.68	
(F3)Technology support				
OC9	0.71	26.70*	0.49	F1 – F3 = 0.55
OC10	0.73	28.68*	0.47	
OC11	0.76	32.42*	0.42	
OC12	0.81	37.96*	0.35	

* $p < 0.001$.

Note: Model fit indices $\chi 2 = 197.49$, $df = 51$, AIC = 14309.93, BIC = 14474.22, CFI = 0.94, TLI = 0.92, RMSEA = 0.08.

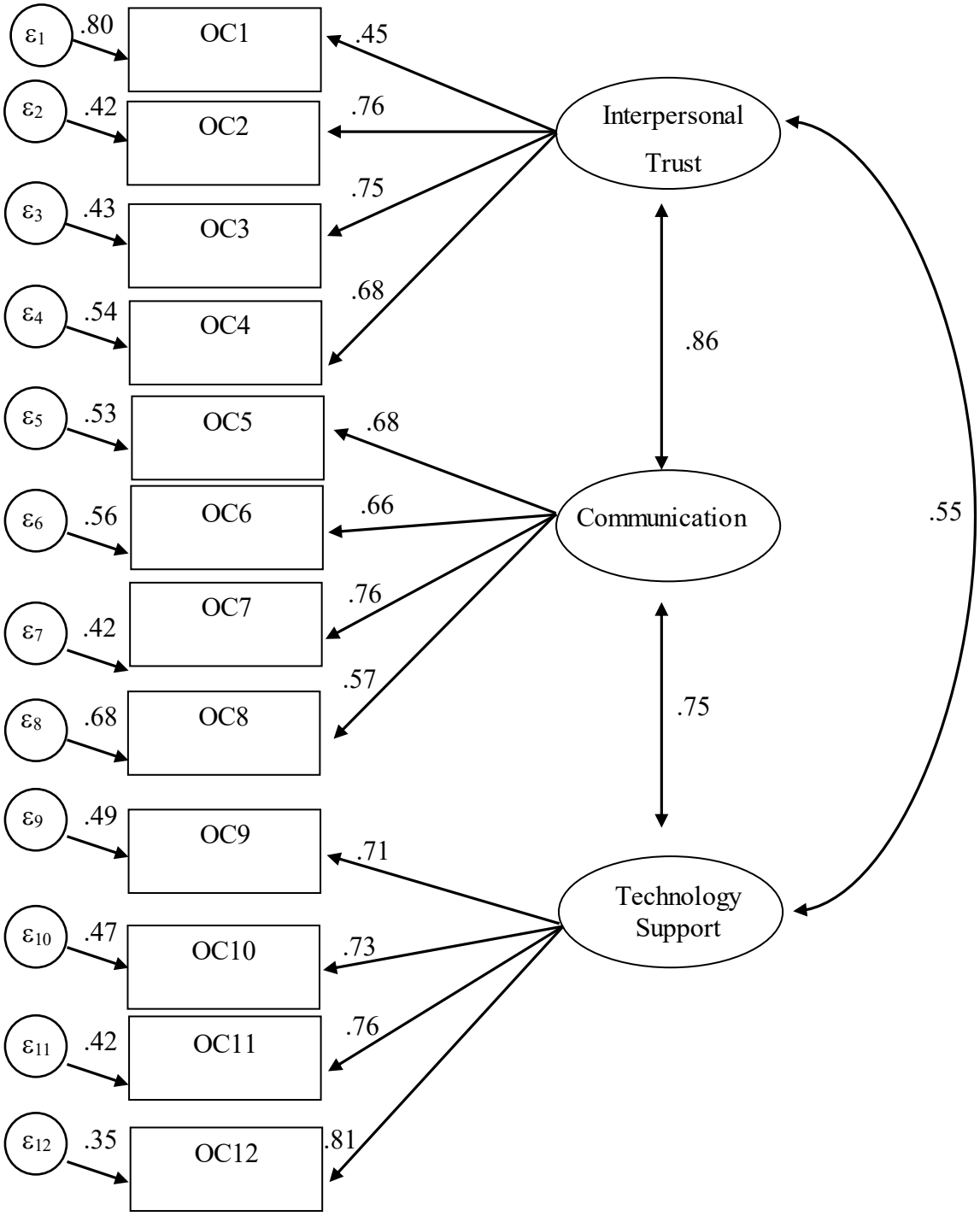


Figure 6-1: CFA Model Three-of the STF Factor Organisational Culture (OC)

Note: e = Estimated item error

Model fit indices $\chi^2 = 197.49$, $df = 51$, AIC = 14309.93, BIC = 14474.22, CFI = 0.94, TLI = 0.92, RMSEA = 0.08.

6.3.3.2 Executive and Managers (EM) CFA Results for the STF Construct

The CFA results of the STF constructs for executives and managers (EM) are shown in Table 6-10. The model in Figure 6-2 shows an adequate fit indices $\chi^2 = 340.37$, $df = 1$, AIC =2490.09, BIC =2524.86, CFI = 1.00, TLI = 1.00, RMSEA = 0.00. The *z-value* for all items to be significant are at less than 0.001, which is good, and most of the R^2 values were either greater than or close to 0.50, indicating the reliability of the variables. For this single-factor model of EM there is no correlation coefficients between factors because there are no factors to correlate between one another as there is only one factor in this CFA model. Finally, the model fit indices proved to be good and unidimensionality was established.

Table 6-10 Executive and Managers (EM) CFA Results for the STF Constructs

Factor/ variable	Factor loading	*z*-value	R^2	Correlations between factors
Executives and managers (EM)				
EM1	0.81	24.55*	0.34	
EM2	0.77	22.83*	0.40	
EM3	0.69	19.01*	0.52	

* $p < 0.001$.

Note: Model fit indices $\chi^2 = 340.37$, $df = 1$, AIC = 2490.09, BIC = 2524.86, CFI = 1.00, TLI = 1.00, RMSEA = 0.00.

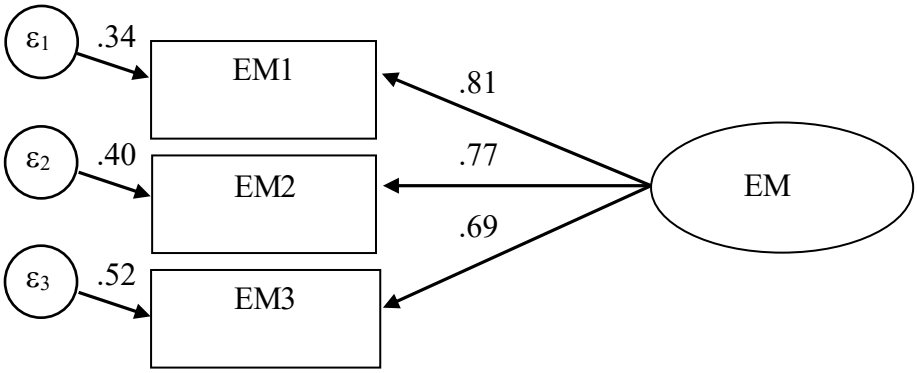


Figure 6-2: CFA Model One-of the STF Factor Executives and Managers Only (EM)

Note: e = Estimated item error.

Model fit indices $\chi^2 = 340.37$, *df* = 1, AIC = 2490.09, BIC = 2424.86, CFI = 1.00, TLI = 1.00, RMSEA = 0.00.

6.3.3.3 Knowledge-sharing Factors (KST, KSA and KSP) CFA Results for the STF Construct

The CFA results of the STF constructs for knowledge-sharing factors (KST, KSA and KSP) are presented in Table 6-11. The model (Figure 6-3) shows adequate fit indices $\chi 2 = 333.11$, *df* = 104, AIC = 19750.71, BIC = 20028.74, CFI = 0.95, TLI = 0.93, RMSEA = 0.07.The *z-value* for all items to be significant is at less than 0.001, which is good, and most of the R^2 values were either greater than or close to 0.50, indicating the reliability of the variables. All of the correlation coefficients between each pair of factors must range between -1 and +1. The KST factor has two sub-factors: explicit (E) and tacit (T). Their correlation coefficients range from F1-F5 = 0.51 to F1-F2 = 0.80 and were less than F1-F4 = 0.71. The KSA factor also has two sub-factors: codification (C) and personalisation (P). Their correlation coefficients range from F3–F5= 0.53 to F3 – F4 = 0.85 and were less than F3–F6 = 0.57. Moreover, the KSP factor has two sub-factors: collection (C) and donation (D). Their correlation coefficients range from F4–F5 = 0.55 to F5–F6 = 0.70 and were less than F4 – F6 = 0.65, thus supporting the discriminated validity of the construct. Finally, the model fit indices proved to be good and unidimensionality was established.

Table 6-11 Knowledge-sharing (KS) Factors (KST), (KSA) and (KSP) CFA Results for the STF Constructs

Factor/variable	Factor loading	*z*-value	R^2	Correlations between factors
F1 Knowledge-sharing type (explicit)				F1 – F2 = 0.80 F1 – F3 = 0.60 F1 – F4 = 0.71 F1 – F5 = 0.51 F1 – F6 = 0.64
KST1	0.68	22.87*	0.53	
KST2	0.72	25.69*	0.48	
KST3	0.77	29.79*	0.41	
F2 Knowledge-sharing type (tacit)				F2 – F3 = 0.56 F2 – F4 = 0.57 F2 – F5 = 0.45 F2 – F6 = 0.69
KST4	0.84	37.64*	0.29	
KST5	0.80	33.52*	0.37	
F3 Knowledge-sharing approaches (codification)				F3 – F4 = 0.85 F3 – F5 = 0.53
KSA1	0.76	29.82*	0.43	
KSA2	0.73	27.03*	0.47	
KSA3	0.73	27.39*	0.47	
F4 Knowledge-sharing approaches (personalisation)				F3 – F6 = 0.57
KSA4	0.81	39.37*	0.34	
KSA5	0.74	30.81*	0.45	
KSA6	0.77	33.86*	0.41	
F5 Knowledge-sharing processes (collection)				F4 – F5 = 0.55 F4 – F6 = 0.65
KSP1	0.84	43.50*	0.29	
KSP2	0.85	43.96*	0.28	
KSP3	0.69	23.56*	0.53	
F6 Knowledge-sharing processes (donation)				F5 – F6 = 0.70

KSP4	0.73	26.75*	0.47	
KSP5	0.81	35.13*	0.35	
KSP6	0.74	27.23*	0.46	

* $p < 0.001$.

Note: Model fit indices $\chi 2 = 333.11$, $df = 104$, AIC = 19750.71, BIC = 20028.74, CFI = 0.95, TLI = 0.93, RMSEA = 0.07.

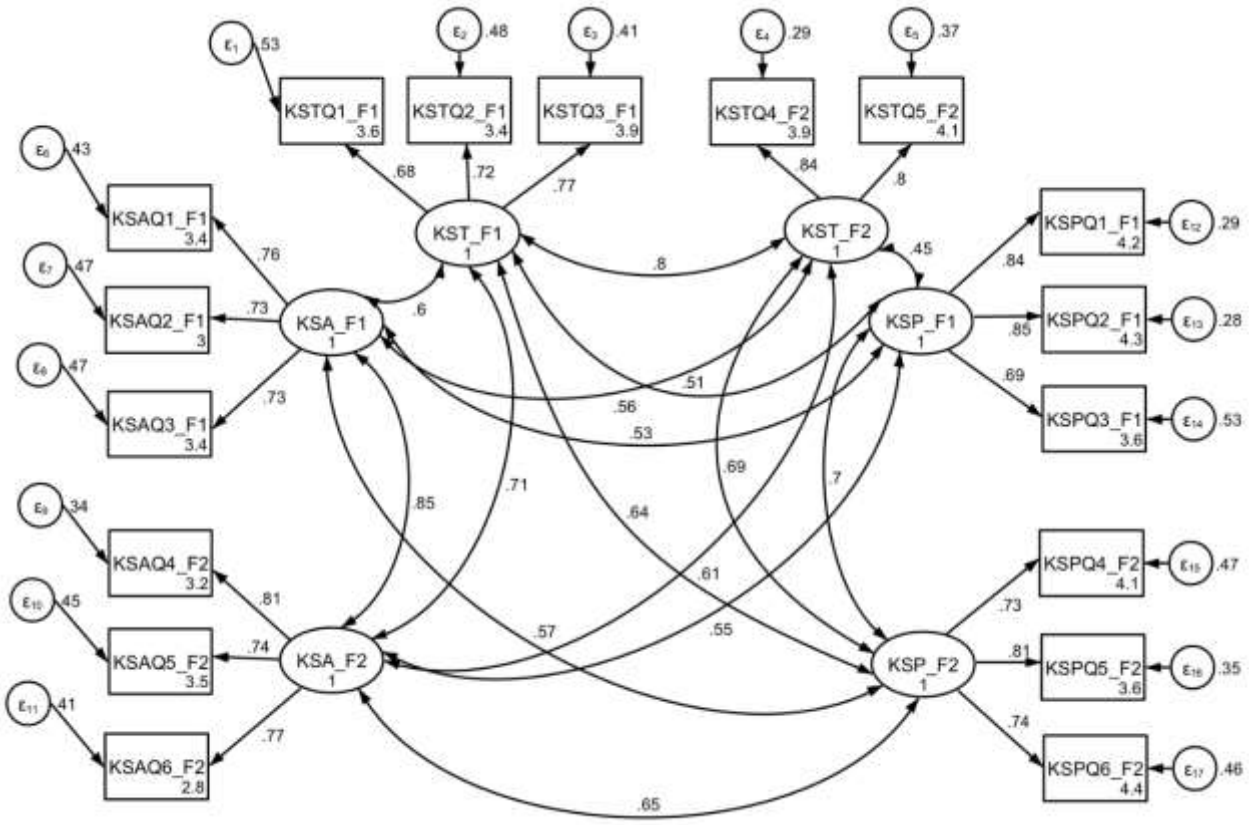


Figure 6-3: CFA Model Six-of the STF Factors For Knowledge-sharing (KS) Factors (KST), (KSA) and (KSP)

Note: e = Estimated Item Error.

Model fit indices $\chi 2 = 333.11$, $df = 104$, AIC = 19750.71, BIC = 20028.74, CFI = 0.95, TLI = 0.93, RMSEA = 0.07.

6.3.3.4 Intellectual Capital (IC) CFA Results for the STF Construct

The CFA results of the STF constructs for intellectual capital (IC) (human capital (HC), structural capital (SC) and relational capital (RC)) are presented in Table 6-12. The model (Figure 6-4) shows adequate fit indices $\chi 2 = 211, 42$, $df = 24$, AIC = 10221.39, BIC = 10347.83, CFI = 0.91, TLI = 0.87, RMSEA = 0.13. The *z-value* for all items to be significant is at less than 0.001, which is good but not that great, and most of the R^2 values were either greater than or close to 0.50, indicating the reliability of the variables. All the correlation coefficients between each pair of factors must range between -1 and +1. The three-factor model of intellectual capital (IC) ranges from factors F1–F3 = 0.74 to F1–F2 = 0.84 and was less than F2–F3 = 0.79, thus supporting the discriminated validity of the construct. Finally, the model fit indices proved to be poor but not that bad, and unidimensionality was established.

Table 6-12 Intellectual Capital (IC) CFA Results for the STF Construct

Factor/variable	Factor loading	*z*-value	R^2	Correlations between factors
(IC F1) Human capital				F1 – F2 = 0.84
IC1	0.68	21.86*	0.54	
IC2	0.76	28.08*	0.43	
IC3	0.81	34.35*	0.35	
(ICF2) Structural capital				F1 – F3 = 0.74
IC4	0.78	31.37*	0.40	
IC5	0.75	28.82*	0.44	
IC6	0.65	20.47*	0.58	
(ICF3) Relational capital				F2 – F3 = 0.79
IC7	0.70	24.33*	0.51	
IC8	0.84	42.32*	0.29	
IC9	0.81	38.02*	0.35	

** $p < 0.001$.*

Note: Model fit indices $\chi 2 = 211,42$, $df = 24$, AIC = 10221.39, BIC = 10347.83, CFI = 0.91, TLI = 0.87, RMSEA = 0.13.

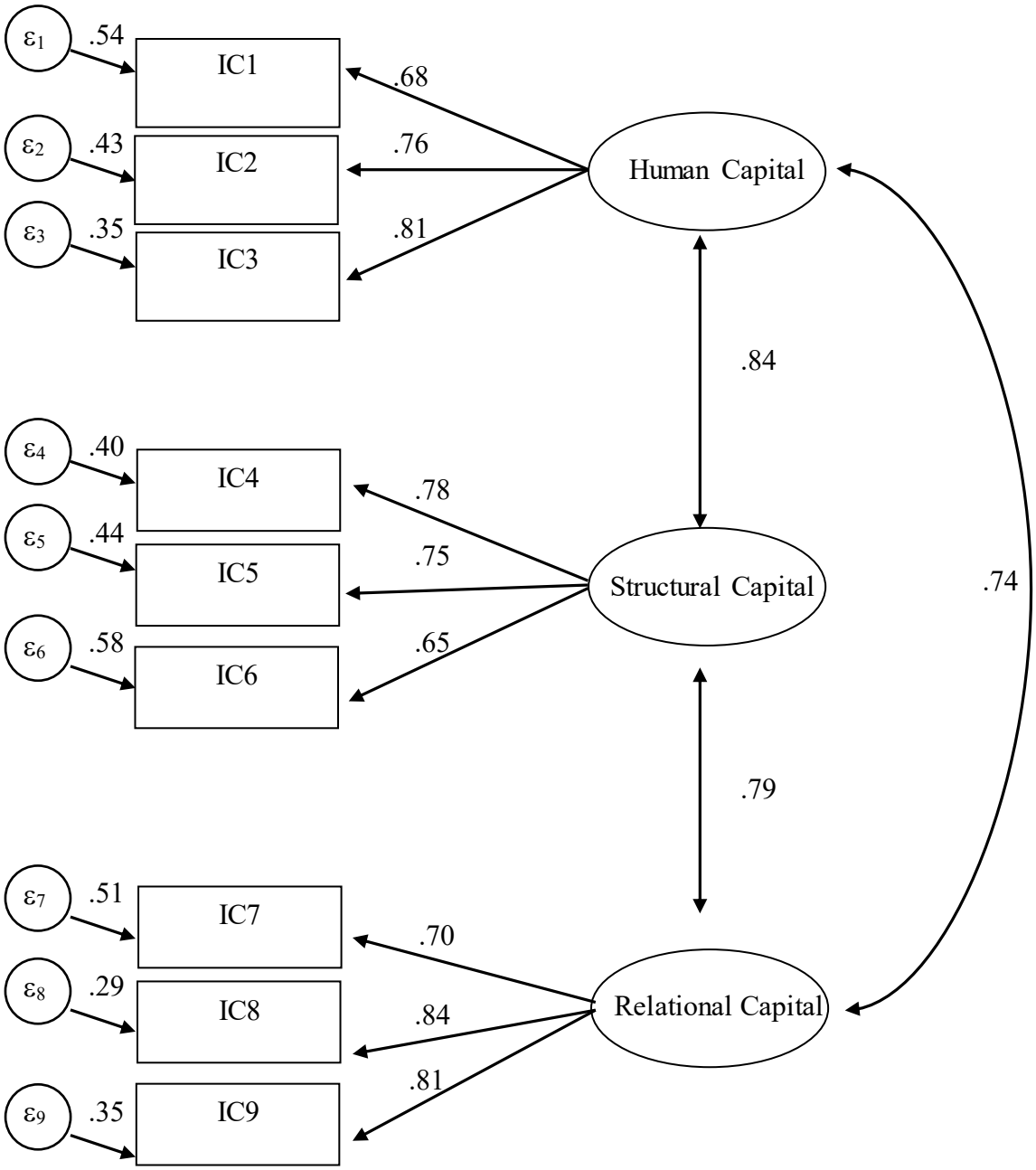


Figure 6-4: CFA Model Three-of the STF Factors Intellectual Capital (IC)

Note: e = Estimated Item Error

Model fit indices χ^2 = 211,42, *df* = 24, AIC = 10221.39, BIC = 10347.83, CFI = 0.91, TLI = 0.87, RMSEA = 0.13.

6.3.3.5 Organisational Success (OS) CFA Results for the STF Construct

The CFA results for the STF constructs of organisational success (OS) (operational performance (OP) and financial performance (FP)) are presented in Table 6-13. The model in Figure 6-5 shows an adequate fit $\chi 2 = 64.39$, $df = 19$, AIC = 8289.54, BIC = 8394.91, CFI = 0.98, TLI = 0.97, RMSEA = 0.07. The *z-values* for all items to be significant are at less than 0.001, which is good, and most of the R^2 values were either greater than or close to 0.50, indicating the reliability of the variables. All the correlation coefficients between each pair of factors must range between -1 and +1, and for the two-factor model of OS ranges from F1–F2 = 0.82, thus supporting the discriminated validity of the construct. Finally, the model fit indices proved to be good, and unidimensionality was established.

Table 6-13 Organisational Success (OS) CFA Results for the STF Construct

Factor/variable	Factor loading	*z*-value	R^2	Correlations between factors
(OSF1) Operational performance				F1 – F2 = 0.82
OS1	0.82	44.85*	0.33	
OS2	0.83	46.73*	0.32	
OS3	0.83	46.78*	0.32	
(OSF2) Financial performance				
OS5	0.83	47.33*	0.31	
OS6	0.82	44.75*	0.33	
OS7	0.82	45.01*	0.33	
OS8	0.77	36.48*	0.40	

** $p < 0.001$.*

Note: Model fit indices $\chi 2 = 64.39$, $df = 19$, AIC = 8289.54, BIC = 8394.91, CFI = 0.98, TLI = 0.97, RMSEA = 0.07.

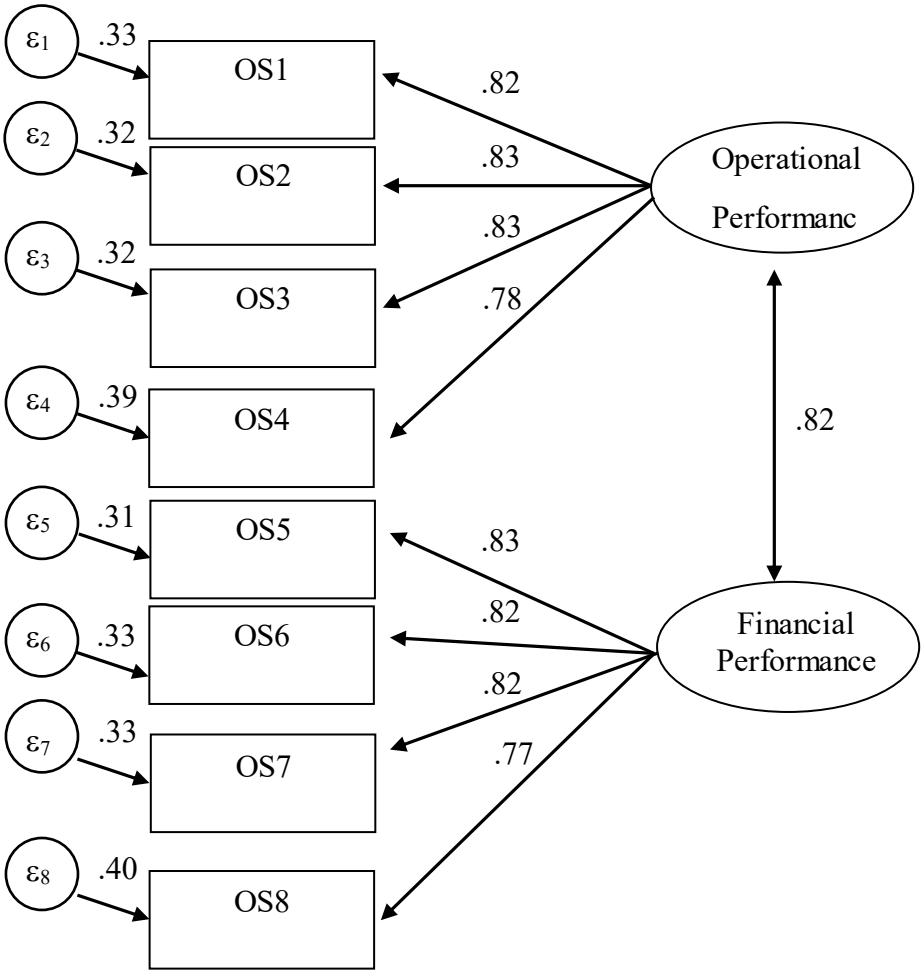


Figure 6-5: CFA Model Two-of the STF Factors Organisational Success (OS)

Note: e = Estimated Item Error.

Model fit indices $\chi^2 = 64.39$, $df = 19$, AIC = 8289.54, BIC = 8394.91, CFI = 0.98, TLI = 0.97, RMSEA = 0.07.

6.4 CFA Results of the Constructs with the Fit Indices for all Structural Equation Model Variables

Table 6-14. Fit indices for all Structural Equation Model Variables

Model	X^2	*df*	*p*	RMSEA	95%	CI	CFI	TLI	CD	Fit
OC	197.49	51	0.001	0.08	0.07	0.09	0.94	0.92	0.98	Good
EM	340.37	1	0.001	0.00	-	-	1.00	1.00	0.83	Good
KS	333.11	104	0.001	0.07	0.06	0.08	0.95	0.93	0.99	Good
IC	211.42	24	0.001	0.13	0.11	0.14	0.91	0.87	0.98	Poor
OS	64.39	19	0.001	0.07	0.05	0.09	0.98	0.97	0.97	Good

Note: RMSEA = Root mean squared error of approximation

CFI = Comparative fit index

TLI = Tucker-Lewis index

CD = Coefficient of determination

Table 6-15 CFA Models Outcome

Research questions	CFA model	CFA result of the constructs fit indices	Source
RQ1: How does organisational culture influence knowledge environment in the organisational success of information technology firms in Saudi Arabia? **a.** From an employment perspective. **b.** From an executive and management perspective.	OC and EM	Good	- Li (2005) - Klitmoller and Laurin (2013) - Pauali et al., (2016) - Rycraft and Kash (2002) - Dewett and Jones (2001).

RQ2: What are the main factors that influence the use of knowledge-sharing (knowledge-sharing type, knowledge-sharing approach and knowledge-sharing process) and organisational success?	KS factors	Good	- Wang, Wang and Liang (2014) - McMahon, Lowe and Culley (2004) - Lai, Wang and Chou (2009) - Liao, Fei and Chen (2007)
RQ3: Towards the success of Saudi information technology firms the following questions are addressed: **a.** How does the type of knowledge-sharing (explicit or tacit) impact on intellectual capital factors (human, structural and relational)? **b.** How does knowledge-sharing approaches (codification and personalisation) impact on intellectual capital factors (human, structural and relational)? **c.** How does the knowledge-sharing process (collection and donation) impact intellectual capital factors (human, structural and relational)?	IC	Poor	- Wang, Wang and Liang (2014)
RQ4: How does intellectual capital influence the features of organisational success in terms of operational and financial performance?	OS	Good	- Lee (2001) - Wang, Wang and Liang (2014)
RQ5: How do the organisational culture and knowledge environment influence the organisational success for Saudi and non-Saudis in Saudi Arabia's IT firms?			-Presented in Chapter 7 (Section 7.10)

6.5 Significance and Contribution

The measurement scale analysis contributes to two main set of analysis. First, the identification of correlated item-total correlation and Cronbach alpha for each variable of the given data in the survey questionnaire. Hair et al. (2016) states that values must range between 0.60 to 0.70 for the minimum baseline of accessibility of the model construct. In the above analysis, the values of the alpha coefficient of all the scales ranged from 0.753 to 0.886, which indicates a sufficient level of acceptability. Therefore, the measurement scales appear to consist of a set of consistent variables for capturing the meaning of the model constructs.

A CFA of the five scales was conducted rather than an exploratory factor analysis (EFA) because the factors are already clear on structure of the survey questionnaire, and confirming the hypothesis factor structure is more significant in this analysis than estimating an alternative factor structure. The CFA conducted in this chapter represented the data after examining it and showed that the model fit indices for organisational culture, executives and manager, knowledge-sharing factors and organisational success all had a good model fit and intellectual capital had poor but not that bad fit indices.

The first CFA analysis was for the three-factor model of organisational culture. The values received ranged from 0.55 to 0.86 and were less than 0.081. However, the executives and managers (EM) had only one factor so there is nothing to correlate between each factor. The knowledge-sharing types (KST) factor has two sub-factors explicit (E) and tacit (T) and their correlation coefficients range from F1-F5 = 0.51 to F1-F2 = 0.80 and were less than F1-F4 = 0.71. Then the knowledge-sharing approaches (KSA) factor also has two sub-factors codification (C) and personalisation (P) whose correlation coefficients range from F3 – F5= 0.53 to F3 – F4 = 0.85 and were less than F3 –F6 = 0.57. Moreover, the knowledge-sharing process factor has two sub-factors collection (C) and donation (D) and their correlation coefficient are ranging from F4 –F5 = 0.55 to F5 – F6 = 0.70 and were less than F4 – F6 = 0.65. Specifically, the three-factor model of intellectual capital (IC) range from factors F1- F3 = 0.74 to F1 – F2 = 0.84 and were less than F2 – F3 = 0.79, which is indicated as the only CFA model with poor fit indices. In result, the two-factor model of organisational success (OS) rang F1 – F2 e= 0.82.Thus, supporting the discriminated validity of the construct, the CFA models' fit indices proved to be good, and the unidimensionality was finally proven.

6.6 Chapter Summary

This chapter presented the measurement scale analysis that was used to assess the scale reliability and CFA models of the survey questionnaire. The scale reliability assessment has revealed the measurement scales used to capture the meaning of the model constructs were reliable as indicated by the high values of the Cronbach's alpha for each individual construct. Moreover, the item-total correlations of all the variables were substantial, indicating that each variable adequately measured its underlying construct. Examining the factors using the CFA analysis technique is done to confirm that the validity has demonstrated adequate reliability, validity and unidimensionality. These results also formed a basis for creating the aggregated factors to ease the subsequent model assessment SEM, which is presented in the following chapter, Chapter 7.

Chapter 7: Structural Equation Modelling and Correlation Analysis

7.1 Introduction

This chapter identifies the relationships between the constructs of the research model shown in Figure 7-1. In addition to this, the sequential equation modelling (SEM) in this chapter significantly compares the hypothesis testing between Saudi and non-Saudi executives, managers and employees. Consequently, the correlation analysis verifies the main factors shown in Figure 7-1, which provides an additional contribution to the analysis. Sections 7.3 to 7.7 introduces the SEM models used to test and validate the model constructs presented in Appendix D. Section 7.8 presents the measurement models results and Section 7.9 shows the final structural model summary discussion for both the Saudi and non-Saudi samples. Section 7.10 compares the structural model results between the Saudi and non-Saudi models. Sections 7.11 and 7.12 explain the correlation analysis of the exploratory study, which employs correlation to analyse the relationships between the constructs in the theoretical model. The main objective of this phase was to determine if the constructs are associated with one another and whether these associations were adequately strong so the variance of one or two constructs could be used for alternative predictions. The section also assesses the relationships between the factors of one specific construct with those of another. Section 7.13 summarises the correlation analysis, Section 7.14 presents the significance and contribution of this chapter and, finally, Section 7.15 concludes the chapter.

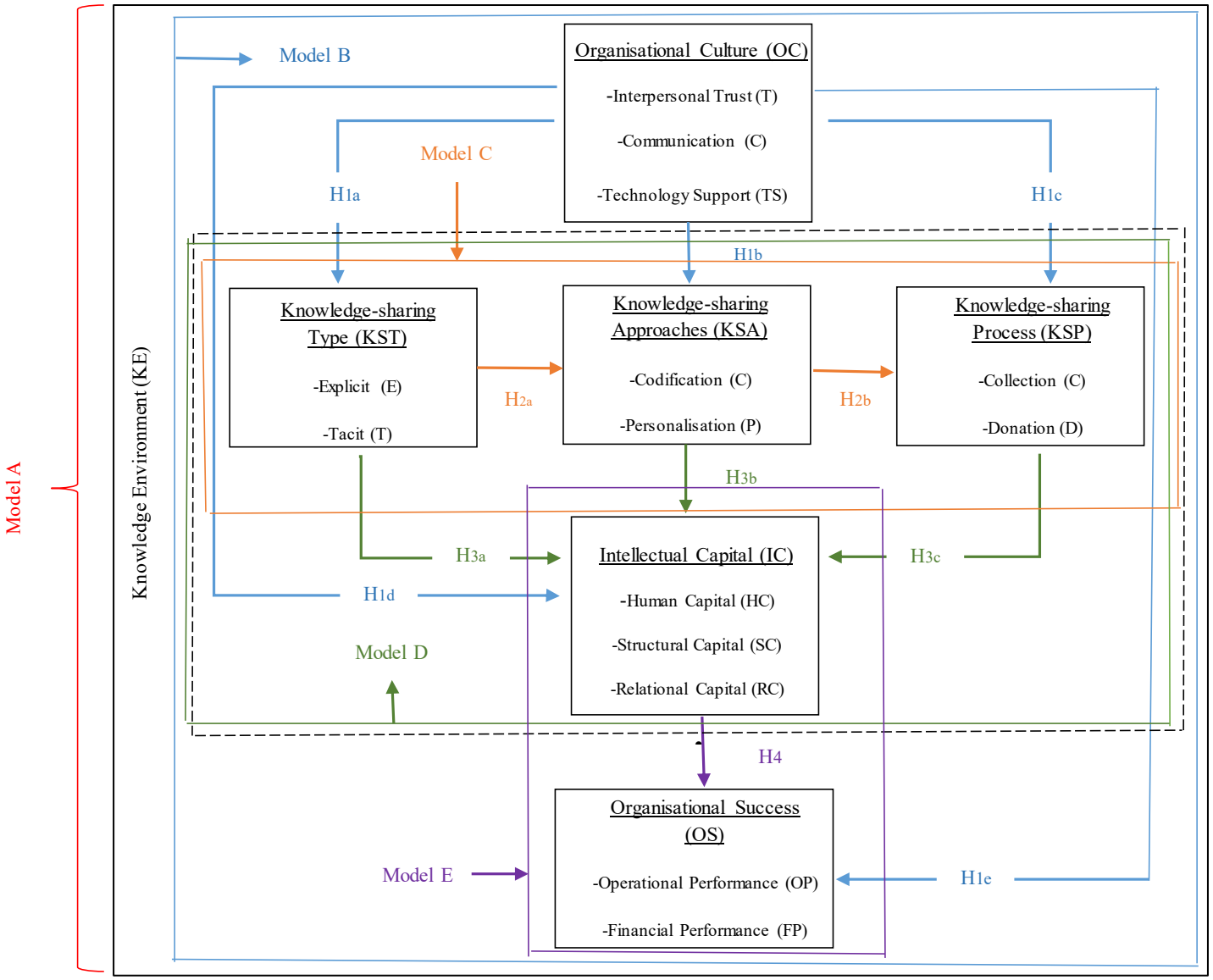


Figure 7-1 Research Model and Hypothesis

7.1.1 Structural Equation Modelling Overview

The desire to test and complete theories and concepts is one of the major reasons authors conduct research and is one that is particularly embraced by SEM analysis (Henseler, Ringle, and Sinkovics 2009; Steenkamp and Baumgartner 2000). This approach is usually an extension of the multivariate assessment techniques, such as regression analysis, which allow the use of multiple indicators to measure the model variables or constructs, taking into consideration the account measurement errors when statistically analysing the data (Hair et al., 2016). The main objective of employing SEM analysis is to determine whether a theoretical model is valid or not by evaluating the relationships among a set of observed and unobserved variables Shah & Goldstein, 2006. These relationships involve casual paths and the estimated path coefficients can be used as a basis for testing the research model hypothesis. The model used in the SEM

assessment can be viewed as a group made up of a measurement model and a structural model, as shown in Figure 7-2. First, the measurement analysis illustrates the relationship between the variables and the constructs and whether the constructs are properly measured or not. However, the structural analysis represents the relationship between the constructs only and is mainly used to test the research model hypothesis. According to Hair et al (2016), the SEM technique is significant in order to assess the measurement model and establish its validity, then for examining the structural model to assess the relationships between the constructs. These two main steps require an assessment of the model fit indices and parameter estimates which was based on a similar procedure and criteria used in the CFA analysis presented in the previous chapter, Chapter 6.

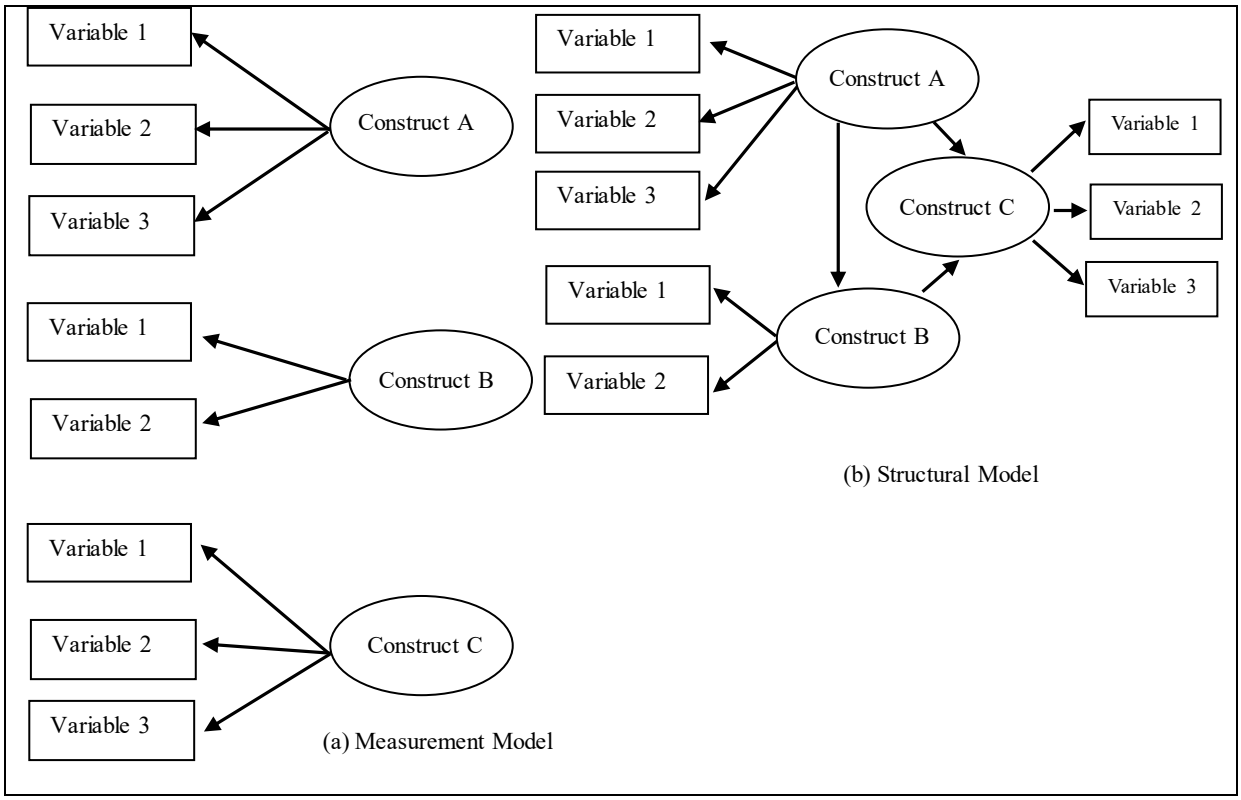


Figure 7-2 Two Key SEM Components

7.2 Measurement Model Assessment

7.2.1 Measurement Model Specification and Assessment Criteria

The measurement model was assessed and conducted using a CFA technique similar to the one performed in Chapter 6. The assessment of the model fit, the convergent and discriminant validity and the unidimensionality were based on the following rubric:

- *Model fit indices:* X^2/df < 3.00; AIC, BIC, CFI, and TLI > 0.90; and RMSEA < 0.50 or ideally > 0.10.
- *Convergent validity:* z-values > 1.96 (significant at $p < 0.05$ level); and R^2 effect size: 0.01 (small), 0.09 (medium) and 0.25 (large) effect.
- *Discriminant validity:* Correlation coefficients for each pair of constructs not to be significant or less than 0.40; and
- *Unidimensionality:* Fit indices of the factor model, specified as unidimensional, satisfy the above model fit criteria.

Furthermore, the reliability of the model was assessed using a more accurate measure of composite reliability and average variance extracted rather than the usual Cronbach's alpha. The composite reliability refers to the degree to which a set of two variables or more are shared in their measurement of a construct (Hooper, D., Coughlan, J. and Mullen, M. R., 2008).

7.2.2 Structural Model Assessment

The structural model assessment was tested by examining the relationships between its constructs after establishing and assessing the validity and unidimensionality of the measurement model. The structural model was constructed to replace all of the double-headed arrows, which represent the correlations between the constructs of the model, and replace them with a single-headed arrow, as shown in Figure 7-3. Theses casual arrows show the hypothesised relationship between the models constructs, as presented in the research model earlier in Figure 7-1. However, Figure 7-3 shows the full structural model defining the factor structures and the hypothesised relationships between its variables.

In general, the model in Figure 7-3 specified the organisational culture (OC) as an exogenous independent construct, whereas the knowledge environment (KE), which contains the constructs of knowledge-sharing type (KST), knowledge-sharing approaches (KSA), knowledge-sharing process (KSP) and intellectual capital (IC), are all considered mediating constructs; on the other hand, organisational success (OS) is specified as endogenous dependent constructs. The assessment practice for the structural model contains an examination for the model fit indices and the standardised path coefficients.

According to Byrne (2016), this approach is based upon whether to accept or reject the hypothesised relationships between the variables in the model. The criteria followed for these model fit indices are similar to those used in the measurement model assessment. In order for

the hypothesised relationships to be supported or not supported, the path coefficient is of significant value at $p < 0.05$ and greater than 0.30.

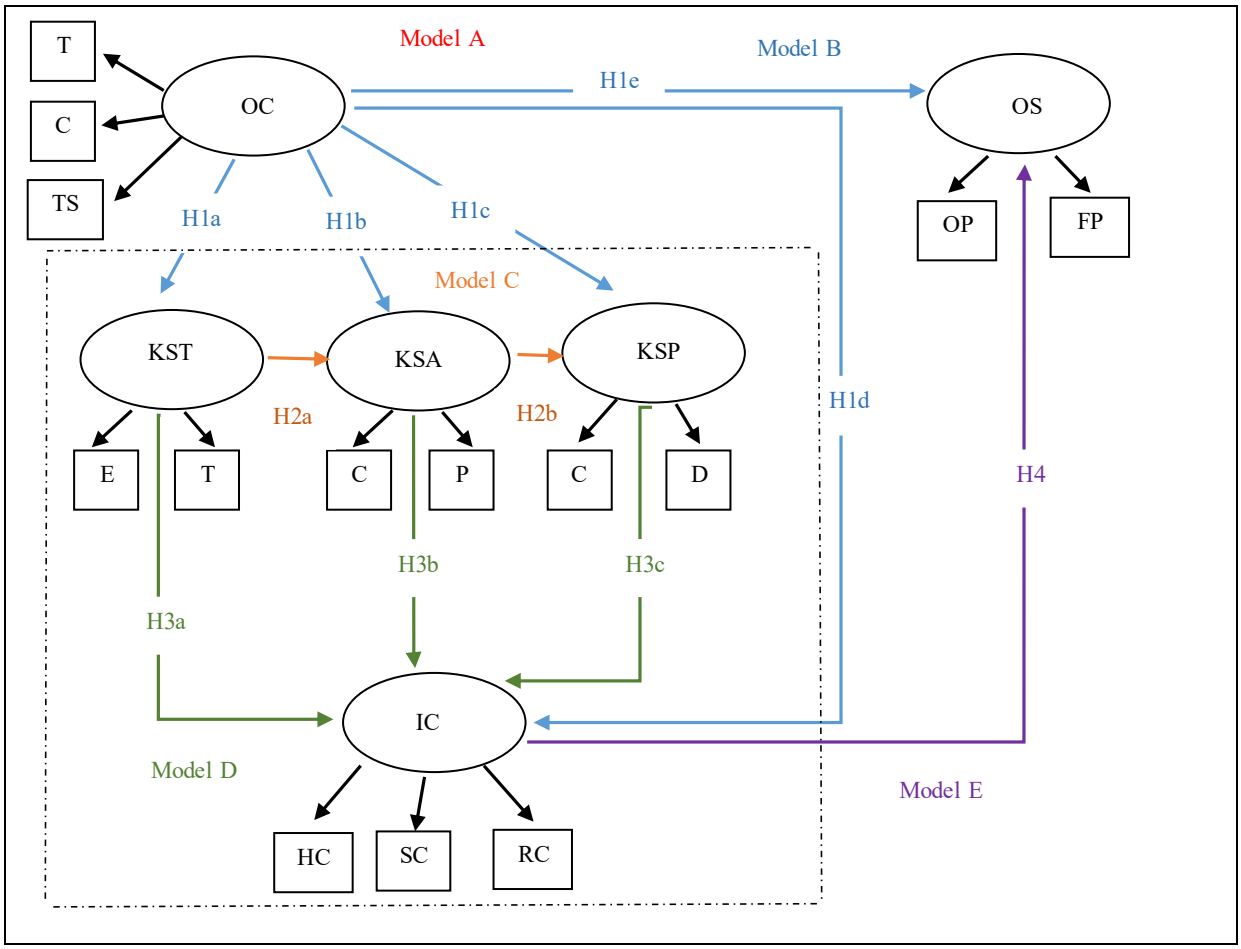


Figure 7-3Structural Model with Hypothesis

7.3 Original Structural Research Model as Presented in AMOS for the Saudi and Non-Saudi Samples (Model A)

7.3.1 Original Structural Research Model as Presented in AMOS for the Saudi Sample

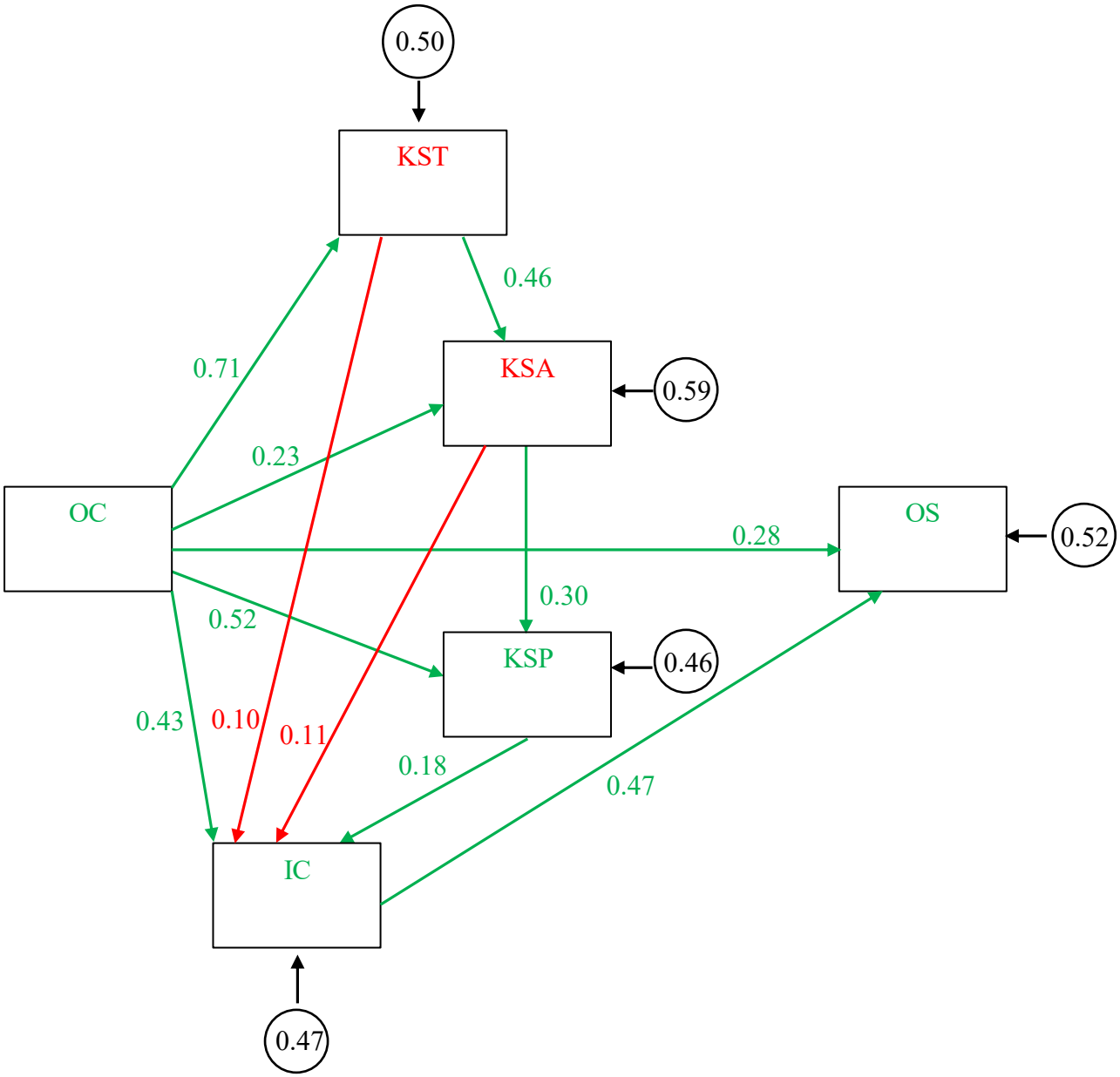


Figure 7-4 Original Structural Research Model as Presented in AMOS for the Saudi Sample

Note: The parts coloured green have a significant relationship between variables and the parts in red are not significant.

Table 7-1 Measurement Model Results for Original Structural Research Model as presented in AMOS for the Saudi Sample

Factor/variable	Factor loading	*z*-value	Hypothesis testing results
OC → KST	0.71	22.32***	Supported
OC → KSA	0.23	2.98**	Supported
OC → OS	0.28	3.94***	Supported
OC → KSP	0.52	9.79***	Supported
OC → IC	0.43	5.28***	Supported
KST→ KSA	0.46	5.94***	Supported
KST→ IC	0.10	1.24	Not supported
KSA → KSP	0.30	5.08***	Supported
KSA → IC	0.11	1.61	Not supported
KSP → IC	0.18	2.45*	Supported
IC → OS	0.47	6.73***	Supported

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Note: Model fit indices $X^2 = 5.14$, $df = 4$, AIC = 6189.502, BIC = 6256.786, CFI = 0.998, TLI = 0.993, RMSEA = 0.040.

All factor variables within the original structural research model for the Saudi sample shown in Figure 7-4 are supported between their relationships and are strongly significant, with the exception of knowledge-sharing type with intellectual capital and knowledge-sharing approaches with intellectual capital. These are not supported and are less significant, as shown in Table 7-1.

7.3.2 Original Structural Research Model as Presented in AMOS for the Non-Saudi Sample

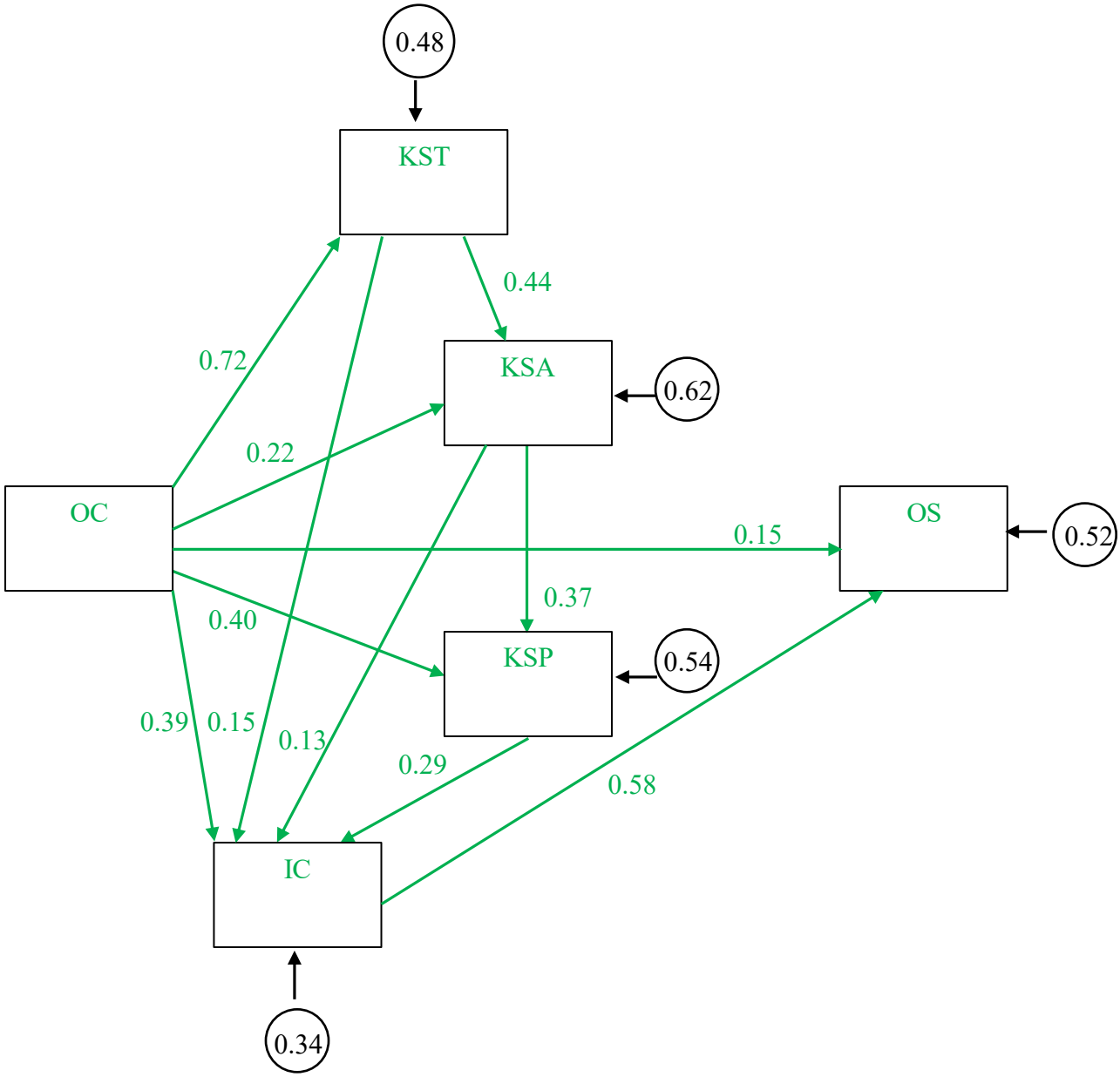


Figure 7-5 Original Structural Research Model as Presented in AMOS for the Non-Saudis Sample

Note: The parts coloured green have a significant relationship between variables in the non-Saudi sample model in Figure 7-5. As a result, the non-Saudi sample model shown in Figure 7-5 is more significant than the Saudi sample model shown in Figure 7-4.

Table 7-2 Measurement Model Results for Original Structural Research Model as Presented in AMOS for the Non-Saudi Sample

Factor/variable	Factor loading	*z*-value	Hypothesis testing results
OC → KST	0.72	30.82***	Supported
OC → KSA	0.22	3.48**	Supported
OC → OS	0.15	2.44*	Supported
OC → KSP	0.40	8.91***	Supported
OC → IC	0.39	8.27***	Supported
KST → KSA	0.44	7.38***	Supported
KST → IC	0.15	2.88**	Supported
KSA → KSP	0.37	7.98***	Supported
KSA → IC	0.13	2.88**	Supported
KSP → IC	0.29	6.37***	Supported
IC → OS	0.58	10.46***	Supported

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Note: Model fit indices $X^2 = 27.25$, $df = 15$, AIC = 10613.563, BIC = 10692.566, CFI = 0.980, TLI = 0.924, RMSEA = 0.135

All factor variables within the original structural research model for the non-Saudi sample shown in Figure 7-5 are supported between their relationships and are highly significant. Therefore, the original structural research model for the non-Saudi sample shown in Table 7-2 is more significant than the Saudi sample shown in Table 7-1.

7.4 Organisational Culture (OC) Structural Model Results for the Saudi and Non-Saudi Samples (Model B)

Figure 7-6 shows a segment of the first hypothesis testings (H1a, H1b, H1c, H1d and H1e) from the original research model shown in Figure 7-1 which has been tested for structural model results for organisational culture factors: interpersonal trust (OC_T), communication (OC_C) and technology support (OC_TS) for both Saudis and non-Saudis (explained in detail in Sections 7.4.1 and 7.4.2).

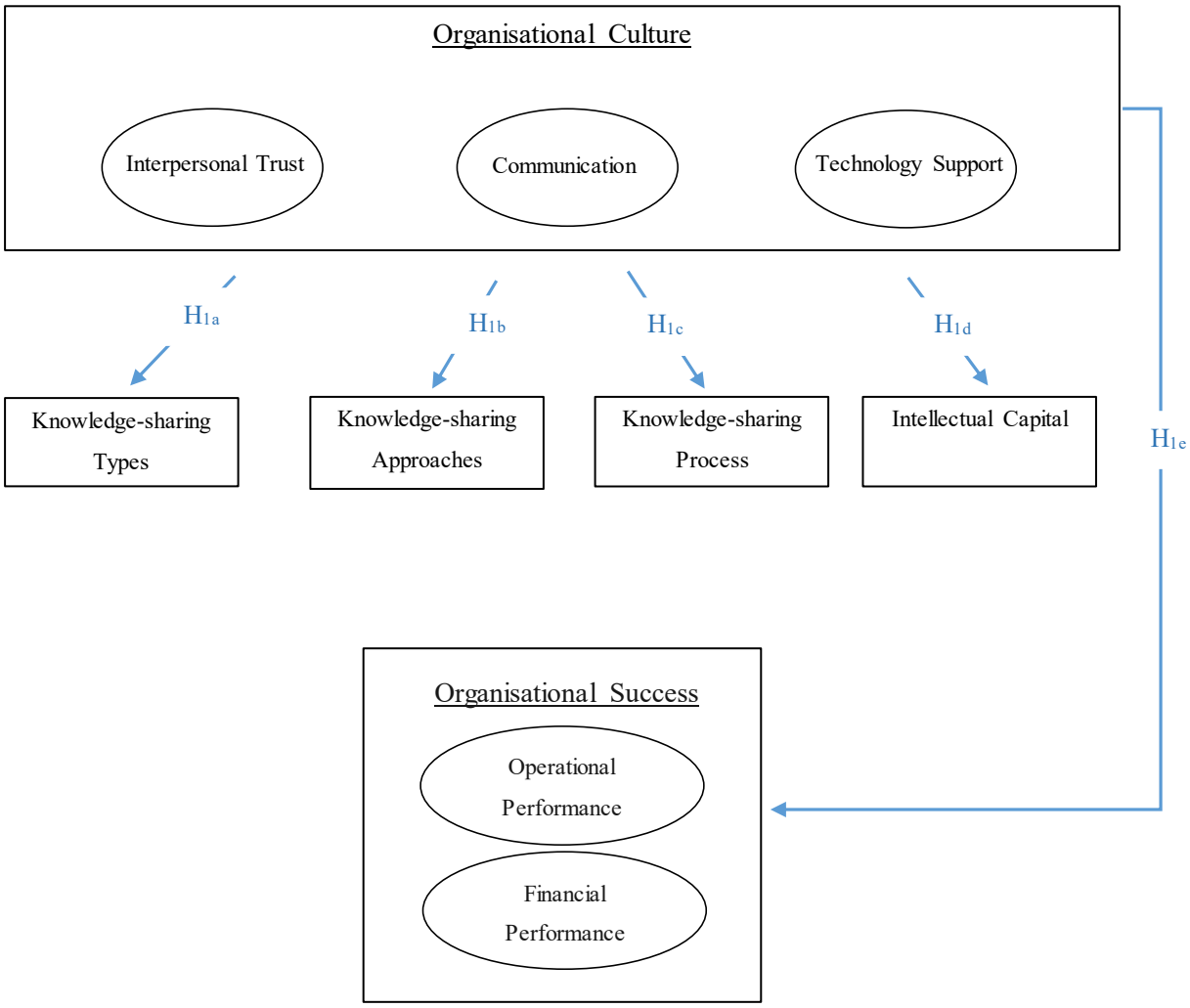


Figure 7-6 Organisational Culture (OC) Hypothesis 1 Segment from the Original Research Model B

7.4.1 Structural Model Results for Organisational Culture (OC) for the Saudi Sample

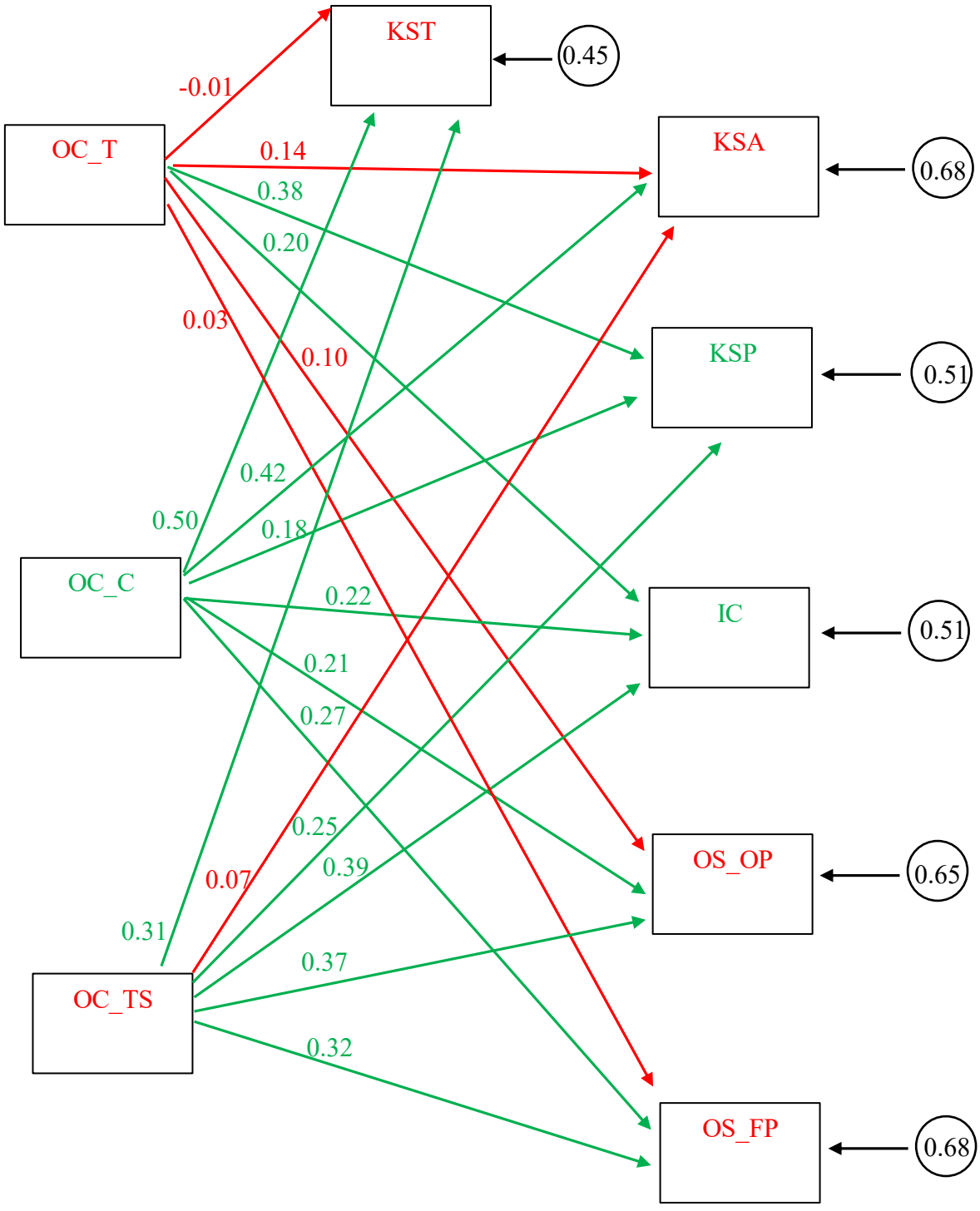


Figure 7-7 Structural Model Result for Organisational Culture (OC) for the Saudi Sample

Note: The parts coloured green have a significant relationship between variable however, the parts in red are not significant.

Table 7-3 Measurement Model Results for Organisational Culture (OC) for the Saudi Sample

Factor/variable	Factor loading	*z*-value	Hypothesis testing results
OC_T → KST	-0.01	-0.12	Not supported
OC_T → KSA	0.14	1.74	Not supported
OC_T → KSP	0.38	5.78***	Supported
OC_T → IC	0.20	2.88**	Supported
OC_T →OS_OP	0.10	1.24	Not supported
OC_T → OS_FP	0.03	0.41	Not supported
OC_C → KST	0.50	6.56***	Supported
OC_C → KSA	0.42	4.51***	Supported
OC_C → KSP	0.18	2.17*	Supported
OC_C → IC	0.22	2.55*	Supported
OC_C →OS_OP	0.21	2.18*	Supported
OC_C → OS_FP	0.27	2.79**	Supported
OC_TS → KST	0.31	4.64***	Supported
OC_TS → KSA	0.07	0.79	Not supported
OC_TS → KSP	0.25	3.52***	Supported
OC_TS→ IC	0.39	5.69***	Supported
OC_TS→OS_OP	0.37	4.71***	Supported
OC_TS→OS_FP	0.32	4.00***	Supported

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Note: Model fit indices $X^2 = 193.63$, $df = 6$, AIC = 8244.619 , BIC = 8340.739 , CFI = 0.767 , TLI = 0.488 , RMSEA = 0.256

The structural model results for organisational culture for the Saudi sample shown in Figure 7-7 shows that the organisational culture interposal trust factor (OC_T) is not supported with knowledge-sharing type, knowledge-sharing approaches and both factors of organisational success: operational performance (OS_OP) and financial performance (OS_FP). The results indicate that the Saudi employees are conflicted in relation to trust towards sharing tacit and explicit knowledge within the organisation as well as codifying knowledge and the

personalisation of tools for the sake of knowledge transfer. Another trust issue that Saudis face is seeing the benefit of organisational success when it comes to the operational part of the organisation or gaining trust from a financial perspective. They consider it a confidential point of view that must not be shared between co-workers unless they are part of the same department (see Table 7-3).

Table 7-4 Organisational Culture (OC) SEM Outcome for the Saudi Sample

Research question 1	Factor	Factor variable relationship	Hypothesis testing
RQ1: How does organisational culture influence knowledge environment in the organisational success of information technology firms in Saudi Arabia? **a.** From an employment perspective. **b.** From an executive and management perspective.	Interpersonal trust	OC_T → KST	Not supported
		OC_T → KSA	Not supported
		OC_T → KSP	Supported
		OC_T → IC	Supported
		OC_T →OS_OP	Not supported
		OC_T → OS_FP	Not supported
	Communication	OC_C → KST	Supported
		OC_C → KSA	Supported
		OC_C → KSP	Supported
		OC_C → IC	Supported
		OC_C →OS_OP	Supported
		OC_C → OS_FP	Supported
	Technology support	OC_TS → KST	Supported
		OC_TS → KSA	Not supported
		OC_TS → KSP	Supported
		OC_TS→ IC	Supported
		OC_TS→OS_OP	Supported
		OC_TS→OS_FP	Supported

7.4.2 Structural Model Results for Organisational Culture (OC) for the Non-Saudi Sample

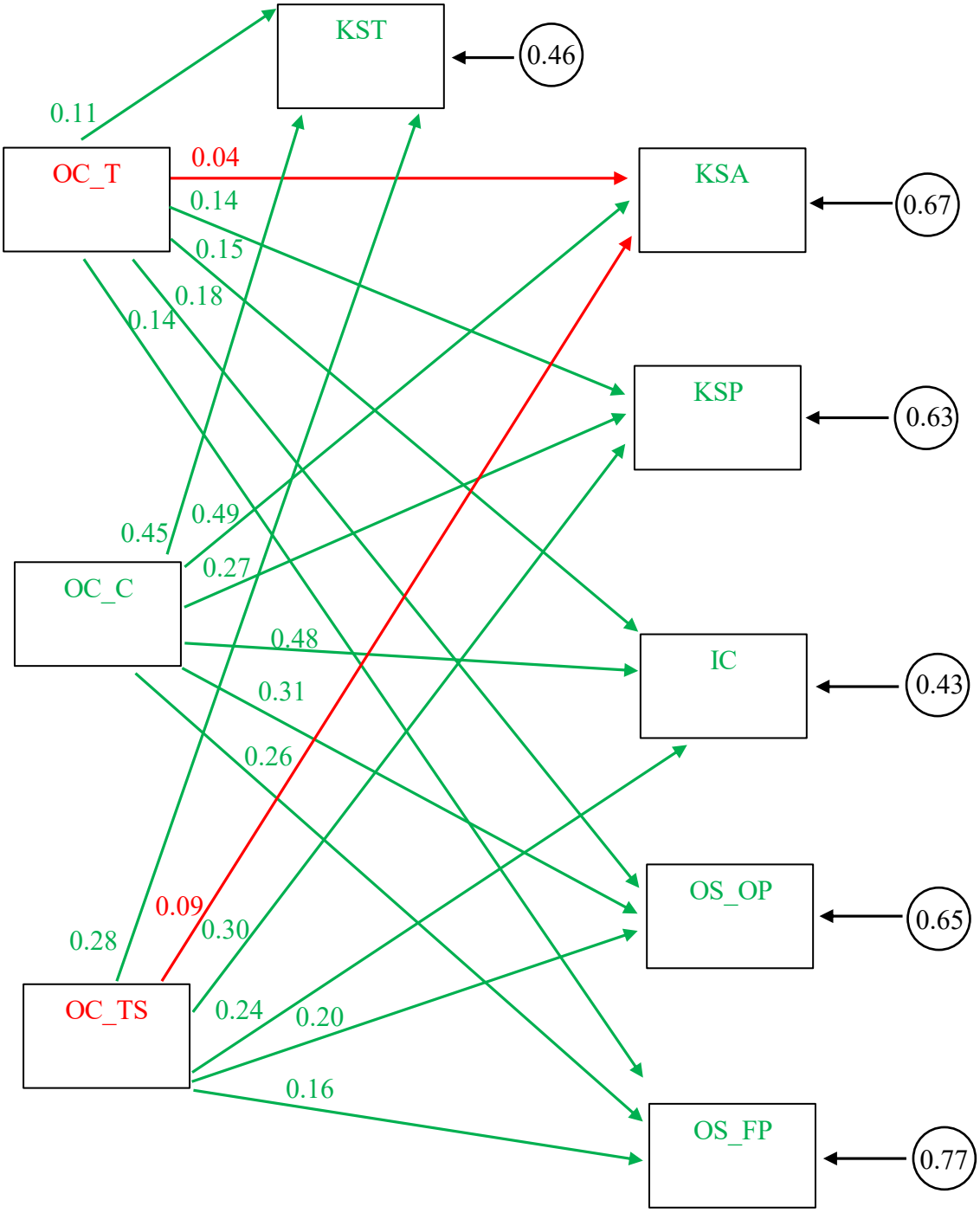


Figure 7-8 Structural Model Results for Organisational Culture (OC) for the Non-Saudi Sample

Note: The parts coloured green have a significant relationship between variables however, the parts in red are not significant.

Table 7-5 Measurement Model Results for Organisational Culture (OC) for the Non-Saudi Sample

Factor/variable	Factor loading	*z*-value	Hypothesis testing results
OC_T → KST	0.11	2.20*	Supported
OC_T → KSA	0.04	0.69	Not supported
OC_T → KSP	0.14	2.53*	Supported
OC_T → IC	0.15	3.15**	Supported
OC_T →OS_OP	0.18	3.06**	Supported
OC_T → OS_FP	0.14	2.22*	Supported
OC_C → KST	0.45	8.95***	Supported
OC_C → KSA	0.49	8.13***	Supported
OC_C → KSP	0.27	4.32***	Supported
OC_C → IC	0.48	9.73***	Supported
OC_C →OS_OP	0.31	4.96***	Supported
OC_C → OS_FP	0.26	3.71***	Supported
OC_TS → KST	0.28	6.07***	Supported
OC_TS → KSA	0.09	1.58	Not supported
OC_TS → KSP	0.30	5.62***	Supported
OC_TS→ IC	0.24	5.28***	Supported
OC_TS→OS_OP	0.20	3.63***	Supported
OC_TS→OS_FP	0.16	2.67**	Supported

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Note: Model fit indices $X^2 = 452.19$, $df = 15$, AIC = 14276.393, BIC = 14389.254, CFI = 0.693, TLI = 0.325, RMSEA = 0.303

In the structural model results for organisational culture for the non-Saudi sample, shown in Figure 7-8, all factor variables are supported between one another and are considered strongly significant, with two exceptions. The organisational culture interpersonal trust factor (OC_T) is not supported with knowledge-sharing approaches, which shows that non-Saudis also do not support sharing both tacit and explicit knowledge within the organisation. Another un-supported factor is the organisational culture technology support with the knowledge-sharing approaches factor. This shows that both interpersonal trust and technology support do not

support knowledge-sharing approaches, which is considered less significant in comparison with the other factor variables shown in Figure 7-8. Therefore, the non-Saudi sample shown in Figure 7-8 is more significant than the Saudi sample shown in Figure 7-7 for the structural model results for the organisational culture.

Table 7-6 Organisational Culture (OC) SEM Outcome for the Non-Saudis Sample

Research question 1	Factor	Factor variable relationship	Hypothesis testing
RQ1: How does organisational culture influence knowledge environment in the organisational success of information technology firms in Saudi Arabia? **a.** From an employment perspective. **b.** From an executive and management perspective.	Interpersonal trust	OC_T → KST	Supported
		OC_T → KSA	Not supported
		OC_T → KSP	Supported
		OC_T → IC	Supported
		OC_T →OS_OP	Supported
		OC_T → OS_FP	Supported
	Communication	OC_C → KST	Supported
		OC_C → KSA	Supported
		OC_C → KSP	Supported
		OC_C → IC	Supported
		OC_C →OS_OP	Supported
		OC_C → OS_FP	Supported
	Technology support	OC_TS → KST	Supported
		OC_TS → KSA	Not supported
		OC_TS → KSP	Supported
		OC_TS→ IC	Supported
		OC_TS→OS_OP	Supported
		OC_TS→OS_FP	Supported

7.5 Knowledge-sharing (KS) Structural Model Results for the Saudi and Non-Saudi Samples (Model C)

Figure 7-9 shows a segment of the testing of the second hypotheses (H2a and H2b) from the original research model (shown in Figure 7-1) that has been tested for structural model results for knowledge-sharing (KS) practices which are: knowledge-sharing types (KST): explicit (KST_E) and tacit (KST_T), knowledge-sharing approaches (KSA): codification (KSA_C) and personalisation (KSA_P), and knowledge-sharing process (KSP): collection (KSP_C) and donation (KSP_D) for both Saudis and non-Saudis (explained in detail in sections 7.5.1 and 7.5.2).

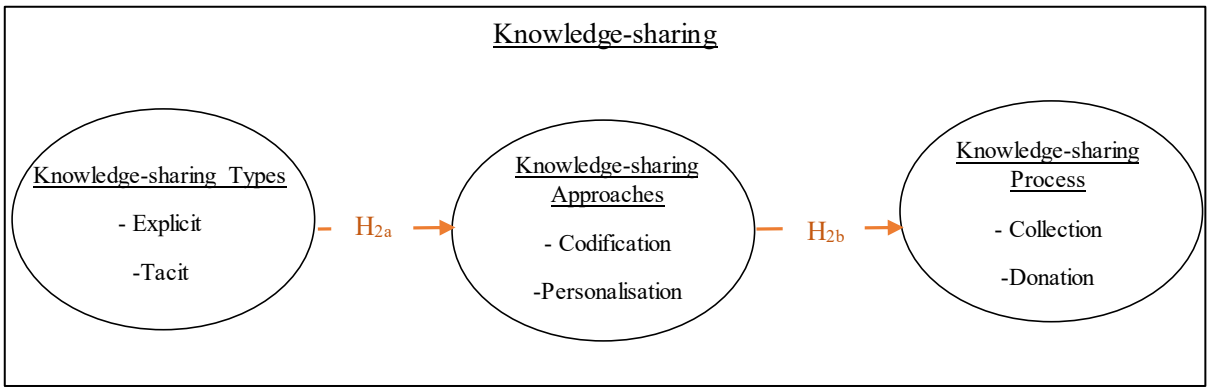


Figure 7-9 Knowledge-sharing (KS) Hypothesis 2 Segment from the Or Research Model C

7.5.1 Structural Model Results for Knowledge-sharing (KS) for the Saudi Sample

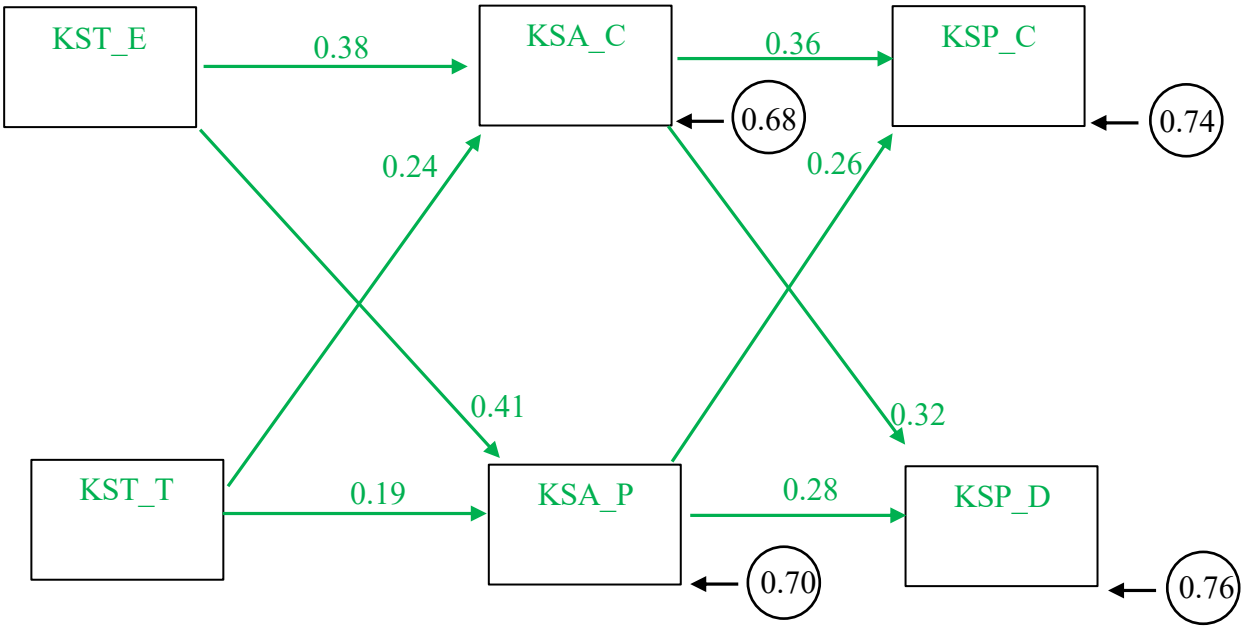


Figure 7-10 Structural Model Results for Knowledge-sharing (KS) for the Saudi Sample

Note: The parts coloured green have a significant relationship between variables for knowledge-sharing for the Saudi sample.

Table 7-7 Measurement Model Results for Knowledge-sharing (KS) for the Saudi Sample

Factor/Variable	Factor loading	*z*-value	Hypothesis testing results
KST_E→ KSA_C	0.38	5.09***	Supported
KST_E → KSA_P	0.41	5.53***	Supported
KST_T→ KSA_C	0.24	3.12**	Supported
KST_T→ KSA_P	0.19	2.38*	Supported
KSA_C→ KSP_C	0.36	4.66***	Supported
KSA_C→ KSP_D	0.32	3.94***	Supported
KSA_P→ KSP_C	0.26	3.15**	Supported
KSA_P→ KSP_D	0.28	3.50***	Supported

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Note: Model fit indices $X^2 = 115.19$, $df = 3$, AIC = 4658.182 , BIC = 4709.446 , CFI = 0.697 , TLI = 0.293 , RMSEA = 0.316

In the structural model results for knowledge-sharing for the Saudi sample shown in Figure 7-10, all factor variables are supported between each other and are considered strongly significant.

Table 7-8 Knowledge-sharing (KS) SEM Outcome for the Saudi Sample

Research question 2	Factor	Factor variable relationship	Hypothesis testing
RQ2: What are the main factors that influence the use of knowledge-sharing (knowledge-sharing type, knowledge-sharing approach and knowledge-sharing process) and organisational success?	Knowledge-sharing type (explicit) and knowledge-sharing approaches (codification)	KST_E→ KSA_C	Supported
	Knowledge-sharing type (explicit) and knowledge-sharing approaches (personalisation)	KST_E → KSA_P	Supported
	Knowledge-sharing type (tacit) and knowledge-sharing approaches (codification)	KST_T→ KSA_C	Supported
	Knowledge-sharing type (tacit) and knowledge-sharing approaches (personalisation)	KST_T→ KSA_P	Supported
	Knowledge-sharing approaches (codification) and knowledge-sharing process (collection)	KSA_C→ KSP_C	Supported
	Knowledge-sharing approaches (codification) and knowledge-sharing process (donation)	KSA_C→ KSP_D	Supported
	Knowledge-sharing approaches (personalisation) and knowledge-sharing process (collection)	KSA_P→ KSP_C	Supported
	Knowledge-sharing approaches (personalisation) and knowledge-sharing process (donation)	KSA_P→ KSP_D	Supported

7.5.2 Structural Model Results for Knowledge-sharing (KS) for the Non-Saudi Sample

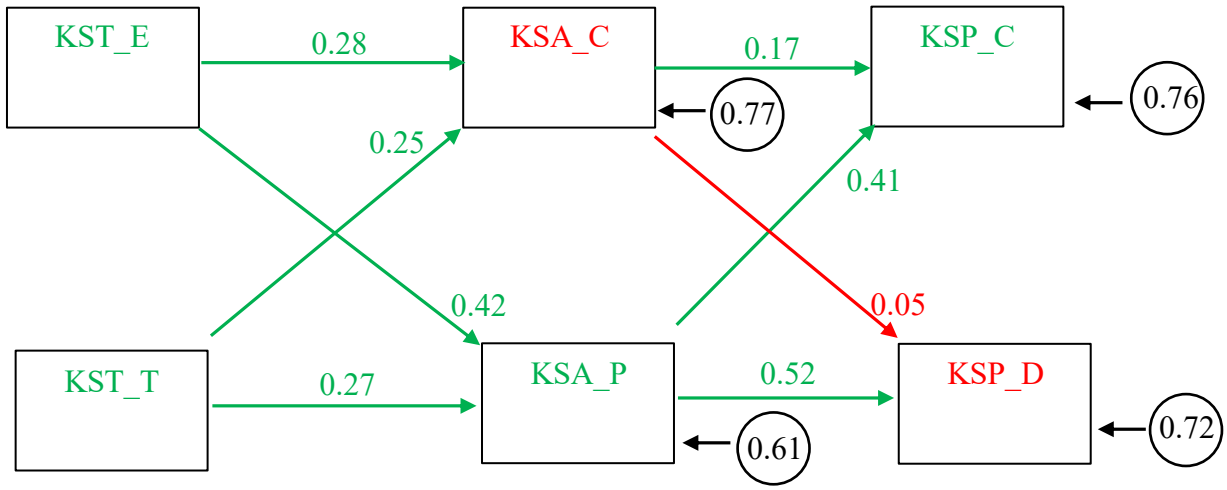


Figure 7-11 Structural Model Results for Knowledge-sharing (KS) for the Non-Saudi Sample

Note: The parts coloured green have a significant relationship between variables and the parts in red are not significant.

Table 7-9 Measurement Model Results for Knowledge-sharing (KS) for the Non-Saudis Sample

Factor/variable	Factor loading	z-value	Hypothesis testing results
KST_E→ KSA_C	0.28	4.58***	Supported
KST_E → KSA_P	0.42	8.04***	Supported
KST_T→ KSA_C	0.25	4.14***	Supported
KST_T→ KSA_P	0.27	5.07***	Supported
KSA_C→ KSP_C	0.17	2.43*	Supported
KSA_C→ KSP_D	0.05	0.75	Not supported
KSA_P→ KSP_C	0.41	6.33***	Supported
KSA_P→ KSP_D	0.52	8.86***	Supported

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Note: Model fit indices $X^2 = 281.45$, $df = 6$, AIC = 8009.131, BIC = 8069.323, CFI = 0.622, TLI = 0.117, RMSEA = 0.380

In the structural model results for knowledge-sharing for the non-Saudi sample shown in Figure 7-11, all factor variables are supported between each other and are considered strongly significant, with the exception of the factor variable between knowledge-sharing approaches collection (KSA_C) and knowledge-sharing approaches donation (KSA_D). This suggests that non-Saudis do not consider the collection and donation of knowledge significant within the organisation for the sake of knowledge-sharing purposes. Therefore, the Saudi sample shown in Figure 7-10 is more significant than the non-Saudi sample shown in Figure 7-11 for the structural model results for the knowledge-sharing model.

Table 7-10 Knowledge-sharing (KS) SEM Outcome for the Non-Saudi Sample

Research question 2	Factor	Factor variable relationship	Hypothesis testing
RQ2: What are the main factors that influence the use of knowledge-sharing (knowledge-sharing type, knowledge-sharing approach and knowledge-sharing process) and organisational success?	Knowledge-sharing type (explicit) and knowledge-sharing approaches (codification)	KST_E→ KSA_C	Supported
	Knowledge-sharing type (explicit) and knowledge-sharing approaches (personalisation)	KST_E → KSA_P	Supported
	Knowledge-sharing type (tacit) and knowledge-sharing approaches (codification)	KST_T→ KSA_C	Supported
	Knowledge-sharing type (tacit) and knowledge-sharing approaches (personalisation)	KST_T→ KSA_P	Supported
	Knowledge-sharing approaches (codification) and knowledge-sharing process (collection)	KSA_C→ KSP_C	Supported
	Knowledge-sharing approaches (codification) and knowledge-sharing process (donation)	KSA_C→ KSP_D	Not supported
	Knowledge-sharing approaches (personalisation) and knowledge-sharing process (collection)	KSA_P→ KSP_C	Supported
	Knowledge-sharing approaches (personalisation) and knowledge-sharing process (donation)	KSA_P→ KSP_D	Supported

7.6 Knowledge Environment Structural Model Results for the Saudi and Non-Saudi Samples (Model D)

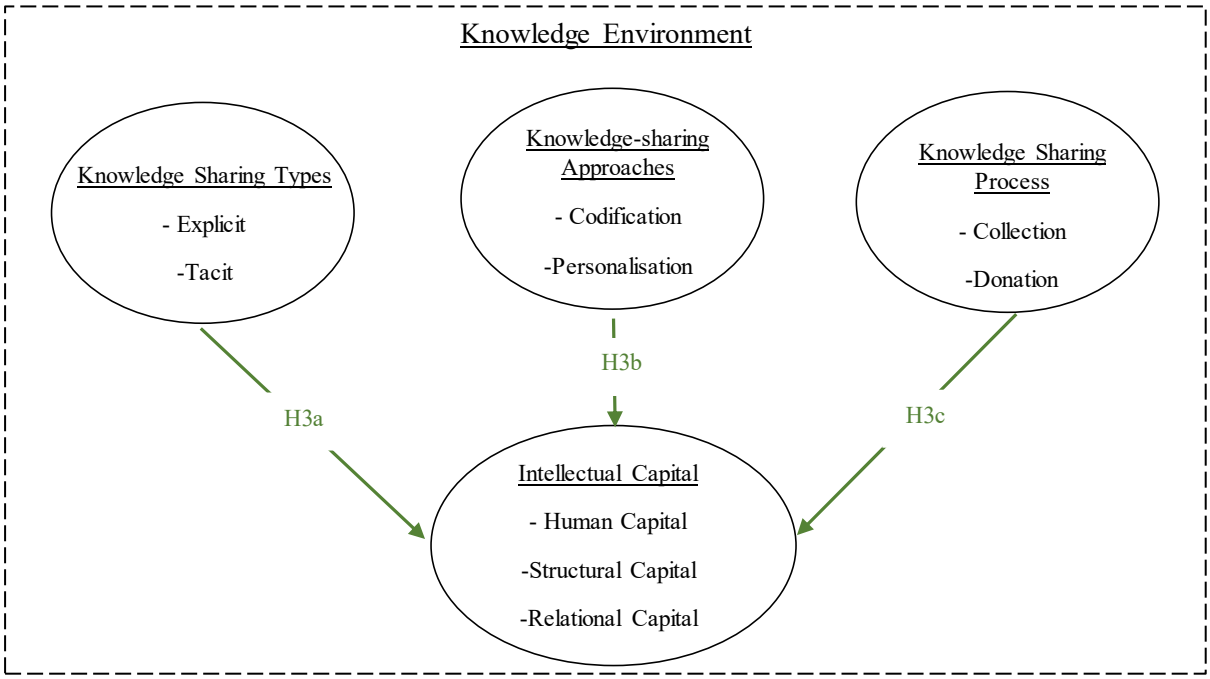


Figure 7-12 Knowledge Environment (KE) Hypothesis 3 Segment from the Original Research Model D

Figure 7-12 shows a segment of the third hypothesis testing (H_{3a}, H_{3b}, and H_{3c}) from the original research model (shown in Figure 7-1) which has been tested for structural model results for knowledge environment: knowledge-sharing types (explicit (KST_E) and tacit (KST_T)); knowledge-sharing approaches (KSA): (codification (KSA_C) and personalisation (KSA_P)); knowledge-sharing process (collection (KSP_C) and donation (KSP_D)); and intellectual capital (human capital (IC_H), structural capital (IC_S), and relational capital (IC_R)) for both Saudis and non-Saudis (explained in detail in Sections 7.6.1 and 7.6.2).

7.6.1 Structural Model Results for Knowledge Environment (KE) for the Saudi Sample

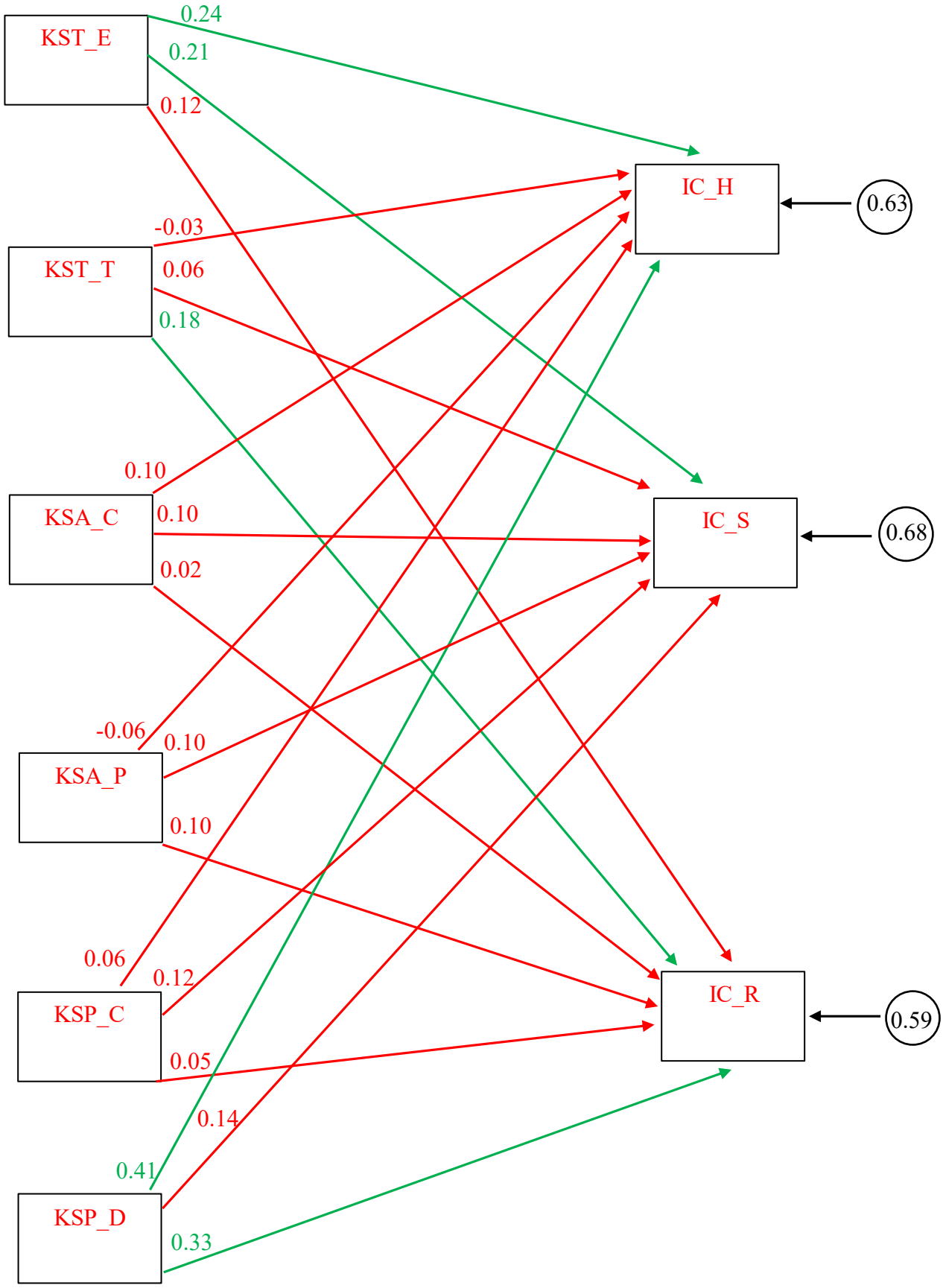


Figure 7-13 Structural Model Results for Knowledge Environment (KE) for the Saudi Sample

Note: The parts coloured green have a significant relationship between variables however, the parts in red are not significant.

Table 7-11 Measurement Model Results for Knowledge Environment (KE) for the Saudi Sample

Factor/variable	Factor loading	*z*-value	Hypothesis testing results
KST_E → IC_H	0.24	2.92**	Supported
KST_E → IC_S	0.21	2.39*	Supported
KST_E → IC_R	0.12	1.45	Not supported
KST_T → IC_H	-0.03	-0.43	Not supported
KST_T → IC_S	0.06	0.73	Not supported
KST_T → IC_R	0.18	2.31*	Supported
KSA_C → IC_H	0.10	1.19	Not supported
KSA_C → IC_S	0.10	1.29	Not supported
KSA_C → IC_R	0.02	0.29	Not supported
KSA_P → IC_H	-0.06	-0.70	Not supported
KSA_P → IC_S	0.10	1.20	Not supported
KSA_P → IC_R	0.10	1.16	Not supported
KSP_C → IC_H	0.06	0.72	Not supported
KSP_C → IC_S	0.12	1.14	Not supported
KSP_C → IC_R	0.05	0.58	Not supported
KSP_D → IC_H	0.41	5.13***	Supported
KSP_D → IC_S	0.14	1.61	Not supported
KSP_D → IC_R	0.33	4.23***	Supported

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Note: Model fit indices $X^2 = 98.63$, $df = 1$, AIC = 6779.975, BIC = 6856.871, CFI = 0.708, TLI = -1.047, RMSEA = 0.418

In the structural model results for knowledge environment (KE) for the Saudi sample shown in Figure 7-13, not all factor variables are supported between each other and are considered less

significant. However, the knowledge-sharing type explicit (KST_E) factor supports both human capital (IC_H) and structural capital (IC_S) and the knowledge-sharing type tacit (KST_T) factor only supports the relational factor (IC_R). On the other hand, knowledge-sharing process donation (KSP_D) factor supports both human capital (IC_H) and relational capital (IC_R).

Table 7-12 Knowledge Environment (KE) SEM Outcome for the Saudi Sample

Research question 3	Factor	Factor variable relationship	Hypothesis testing
RQ3: Towards the success of Saudi information technology firms the following questions are addressed: **a.** How does the type of knowledge-sharing (explicit or tacit) impact on intellectual capital factors (human, structural and relational)?	Knowledge-sharing type (explicit) and (human capital)	KST_E → IC_H	Supported
	Knowledge-sharing type (explicit) and (structural capital)	KST_E → IC_S	Supported
	Knowledge-sharing type (explicit) and (relational capital)	KST_E → IC_R	Not supported
	Knowledge-sharing type (tacit) and (human capital)	KST_T → IC_H	Not supported
	Knowledge-sharing type (tacit) and (structural capital)	KST_T → IC_S	Not supported
	Knowledge-sharing type (tacit) and (relational capital)	KST_T → IC_R	Supported
b. How does knowledge-sharing approaches (codification and	Knowledge-sharing approaches (codification) and (human capital)	KSA_C → IC_H	Not supported
	Knowledge-sharing approaches (codification) and (structural capital)	KSA_C → IC_S	Not supported

personalisation) impact on intellectual capital factors (human, structural and relational)?	Knowledge-sharing approaches (codification) and (relational capital)	KSA_C → IC_R	Not supported
	Knowledge-sharing approaches (personalisation) and (human capital)	KSA_P → IC_H	Not supported
	Knowledge-sharing approaches (personalisation) and (structural capital)	KSA_P → IC_S	Not supported
	Knowledge-sharing approaches (personalisation) and (relational capital)	KSA_P → IC_R	Not supported
c. How does the knowledge-sharing process (collection and donation) impact intellectual capital factors (human, structural and relational)?	Knowledge-sharing process (collection) and (human capital)	KSP_C → IC_H	Not supported
	Knowledge-sharing process (collection) and (structural capital)	KSP_C → IC_S	Not supported
	Knowledge-sharing process (collection) and (relational capital)	KSP_C → IC_R	Not supported
	Knowledge-sharing process (donation) and (human capital)	KSP_D → IC_H	Supported
	Knowledge-sharing process (donation) and (structural capital)	KSP_D → IC_S	Not supported
	Knowledge-sharing process (donation) and (relational capital)	KSP_D → IC_R	Supported

7.6.2 Structural Model Results for Knowledge Environment (KE) for the Non-Saudi Sample

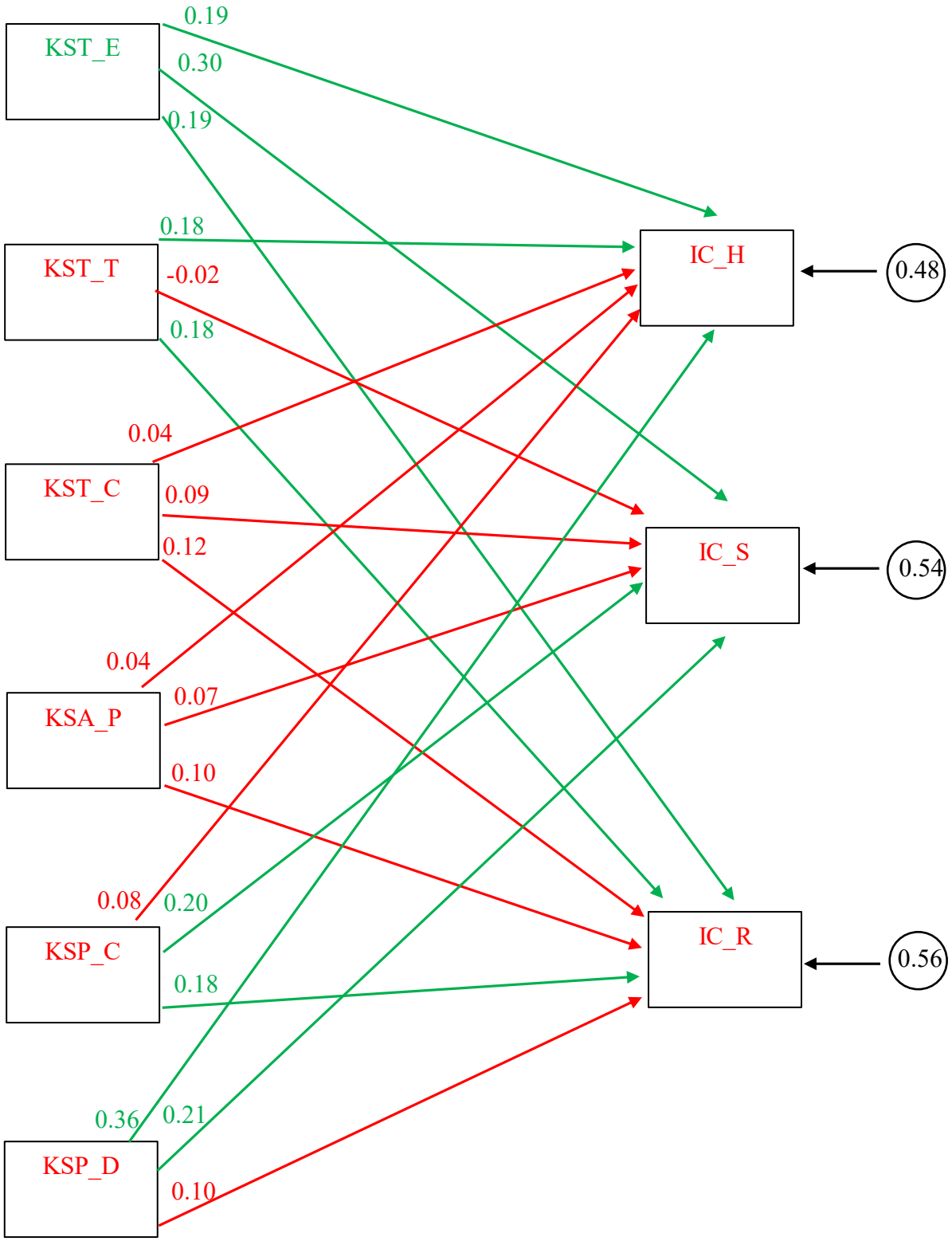


Figure 7-14 Structural Model Results for Knowledge Environment (KE) for the Non-Saudis Sample

Note: The parts coloured green have a significant relationship between variables however, the parts in red are not significant.

Table 7-13 Measurement Model Result for Knowledge Environment (KE) for the Non-Saudi Sample

Factor/variable	Factor loading	*z*-value	Hypothesis testing results
KST_E → IC_H	0.19	3.51***	Supported
KST_E → IC_S	0.30	5.26***	Supported
KST_E → IC_R	0.19	3.19**	Supported
KST_T → IC_H	0.18	3.34**	Supported
KST_T → IC_S	-0.02	-0.28	Not supported
KST_T → IC_R	0.18	3.02**	Supported
KSA_C → IC_H	0.04	0.69	Not supported
KSA_C → IC_S	0.09	1.53	Not supported
KSA_C → IC_R	0.12	1.93	Not supported
KSA_P → IC_H	0.04	0.59	Not supported
KSA_P → IC_S	0.07	1.07	Not supported
KSA_P → IC_R	0.10	1.49	Not supported
KSP_C → IC_H	0.08	1.56	Not supported
KSP_C → IC_S	0.20	3.71***	Supported
KSP_C → IC_R	0.18	3.24**	Supported
KSP_D → IC_H	0.36	6.80***	Supported
KSP_D → IC_S	0.21	3.61***	Supported
KSP_D → IC_R	0.10	1.64	Not supported

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Note: Model fit indices $X^2 = 132.58$, $df = 3$, AIC = 11486.723, BIC = 11577.012, CFI = 0.823, TLI = - 0.241, RMSEA = 0.369

In the structural model results for knowledge environment (KE) for the non-Saudi sample shown in Figure 7-14, all factor variables are supported between each other except for

knowledge-sharing type tacit (KST_T), which does not support the structural capital (IC_S). Consequently, the knowledge-sharing approaches sub-factors codification (KSA_C) and personalisation (KSA_P) do not support the intellectual capital factors: human capital (IC_H), structural capital (IC_S), and relational capital (IC_R). Additionally, the knowledge-sharing process collection (KSP_C) does not support the human capital factor (IC_H) and the knowledge-sharing process donation (KSP_D) does not support the relational capital sub-factor (IC_R). This result shows that the non-Saudi sample for the knowledge environment factors shown in Figure 7-14 is more strongly significant than the Saudi sample shown in Figure 7-13.

Table 7-14 Knowledge Environment (KE) SEM Outcome for the Non-Saudi Sample

Research question 3	Factor	Factor variable relationship	Hypothesis testing
RQ3: Towards the success of Saudi information technology firms the following questions are addressed: **a.** How does the type of knowledge-sharing (explicit or tacit) impact on intellectual capital factors (human, structural and relational)?	Knowledge-sharing type (explicit) and (human capital)	KST_E → IC_H	Supported
	Knowledge-sharing type (explicit) and (structural capital)	KST_E → IC_S	Supported
	Knowledge-sharing type (explicit) and (relational capital)	KST_E → IC_R	Supported
	Knowledge-sharing type (tacit) and (human capital)	KST_T → IC_H	Supported
	Knowledge-sharing type (tacit) and (structural capital)	KST_T → IC_S	Not supported
	Knowledge-sharing type (tacit) and (relational capital)	KST_T → IC_R	Supported
b. How does knowledge-	Knowledge-sharing approaches (codification) and (human capital)	KSA_C → IC_H	Not supported

sharing approaches (codification and personalisation) impact on intellectual capital factors (human, structural and relational)?	Knowledge-sharing approaches (codification) and (structural capital)	KSA_C → IC_S	Not supported
	Knowledge-sharing approaches (codification) and (relational capital)	KSA_C → IC_R	Not supported
	Knowledge-sharing approaches (personalisation) and (human capital)	KSA_P → IC_H	Not supported
	Knowledge-sharing approaches (personalisation) and (structural capital)	KSA_P → IC_S	Not supported
	Knowledge-sharing approaches (personalisation) and (relational capital)	KSA_P → IC_R	Not supported
c. How does the knowledge-sharing process (collection and donation) impact intellectual capital factors (human, structural and relational)?	Knowledge-sharing process (collection) and (human capital)	KSP_C → IC_H	Not supported
	Knowledge-sharing process (collection) and (structural capital)	KSP_C → IC_S	Supported
	Knowledge-sharing process (collection) and (relational capital)	KSP_C → IC_R	Supported
	Knowledge-sharing process (donation) and (human capital)	KSP_D → IC_H	Supported
	Knowledge-sharing process (donation) and (structural capital)	KSP_D → IC_S	Supported
	Knowledge-sharing process (donation) and (relational capital)	KSP_D → IC_R	Not supported

7.7 Intellectual Capital (IC) and Organisational Success Structural Model Results for the Saudi and Non-Saudi Samples (Model E)

Figure 7-15 shows a segment of the fourth hypothesis' testing (H_4) from the original research model (shown in Figure 7-1) which has been tested for structural model results for the intellectual capital sub-factors (human capital (IC_H), structural capital (IC_S), and relational capital (IC_R)) and for organisational success sub-factors (operational performance (OS_OP) and financial performance (OS_FP)) for both Saudis and non-Saudis (explained in detail in Sections 7.7.1 and 7.7.2).

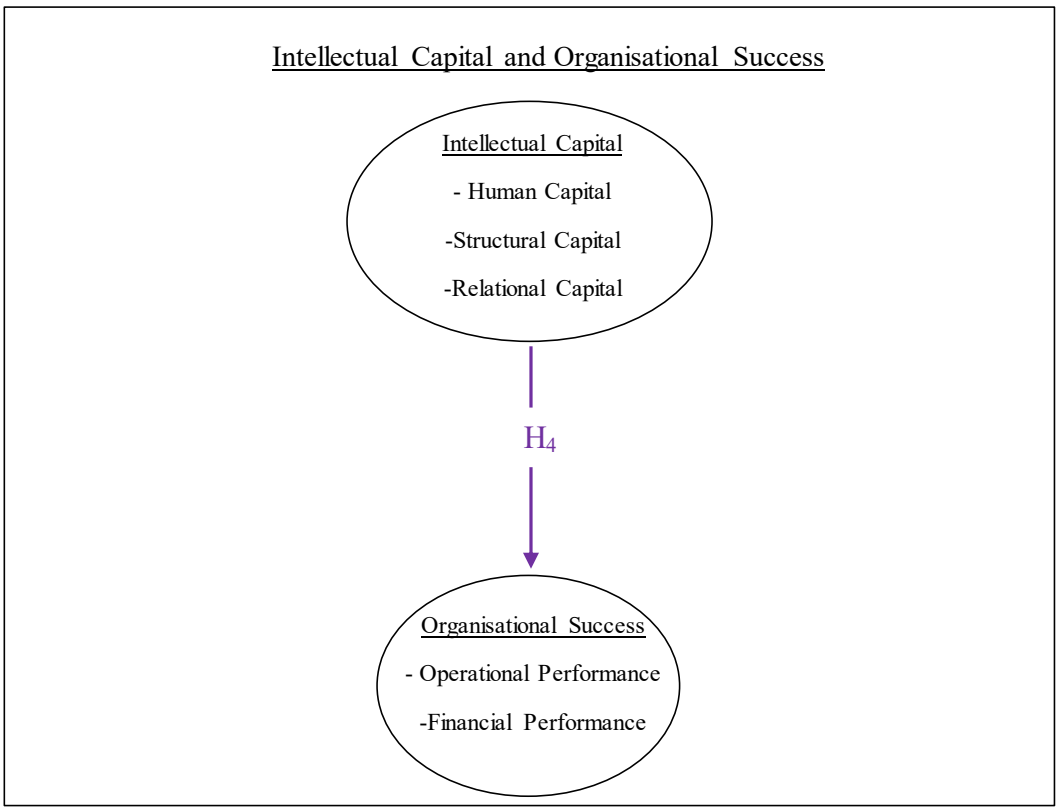


Figure 7-15 Intellectual Capital (IC) and Organisational Success (OS) Hypothesis 4 Segment from the Original Research Model E

7.7.1 Structural Model Results for Intellectual Capital (IC) and Organisational Success (OS) for the Saudi Sample

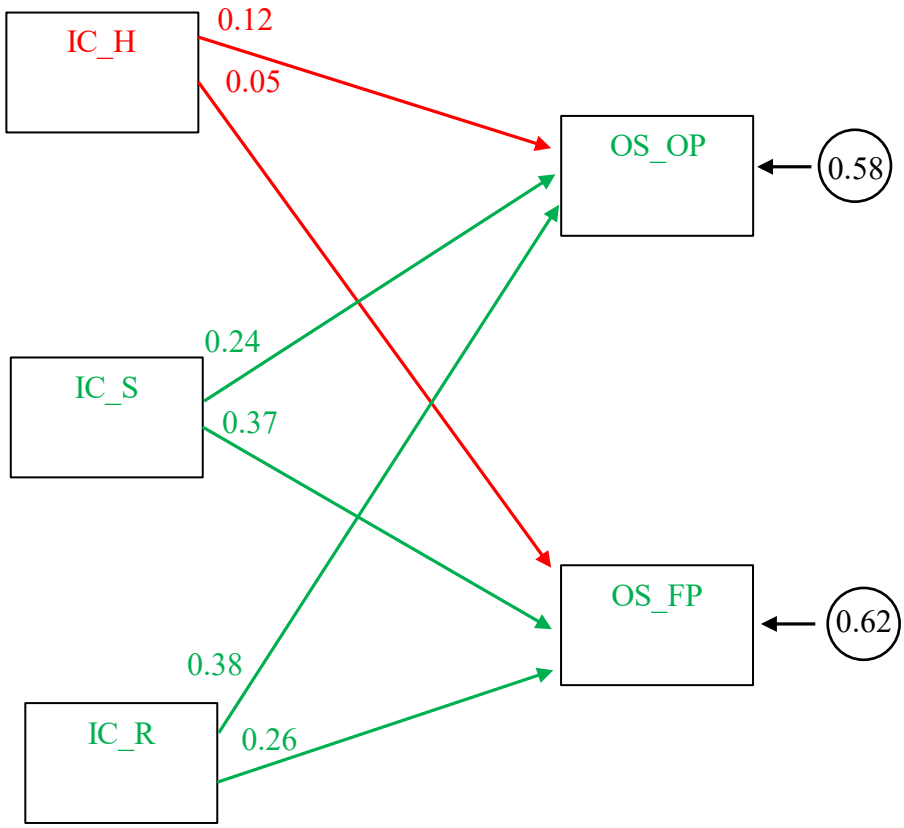


Figure 7-16 Structural Model Results for Intellectual Capital (IC) and Organisational Success (OS) for the Saudi Sample

Note: The parts coloured green have a significant relationship between variables however, the parts in red are not significant.

Table 7-15 Measurement Model Results for Intellectual Capital (IC) and Organisational Success (OS) for the Saudi Sample

Factor/variable	Factor loading	*z*-value	Hypothesis testing results
IC_H → OS_OP	0.12	1.57	Not supported
IC_H → OS_FP	0.05	0.65	Not supported
IC_S → OS_OP	0.24	2.99**	Supported
IC_S → OS_FP	0.37	4.70***	Supported
IC_R → OS_OP	0.38	4.88***	Supported
IC_R → OS_FP	0.26	3.13**	Supported

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Note: Model fit indices X^2 =65.98, *df* = 4, AIC = 4004.856, BIC = 4036.896, CFI = 0.734, TLI =-0.859, RMSEA = 0.598

The structural model results for intellectual capital and organisational success for the Saudi sample shown in Figure 7-16 illustrate that all factor variables are supported between each other, except for the human capital (IC_H) sub-factor that does not support either of the organisational success sub-factors: operational performance (OS_OP) and financial performance (OS_FP). This makes the model less significant.

Table 7-16 Intellectual Capital (IC) and Organisational Success (OS) SEM Outcome for the Saudi Sample

Research question 4	Factor	Factor variable relationship	Hypothesis testing
RQ4: How does intellectual capital influence the features of organisational success in terms of operational and financial performance?	Human capital and organisational success (operational performance)	IC_H → OS_OP	Not Supported
	Human capital and organisational success (financial performance)	IC_H → OS_FP	Not Supported
	Structural capital and organisational success (operational performance)	IC_S → OS_OP	Supported
	Structural capital and organisational success (financial performance)	IC_S → OS_FP	Supported
	Relational capital and organisational success (operational performance)	IC_R → OS_OP	Supported
	Relational capital and organisational success (financial performance)	IC_R → OS_FP	Supported

7.7.2 Structural Model Results for Intellectual Capital (IC) and Organisational Success (OS) for the Non-Saudi Sample

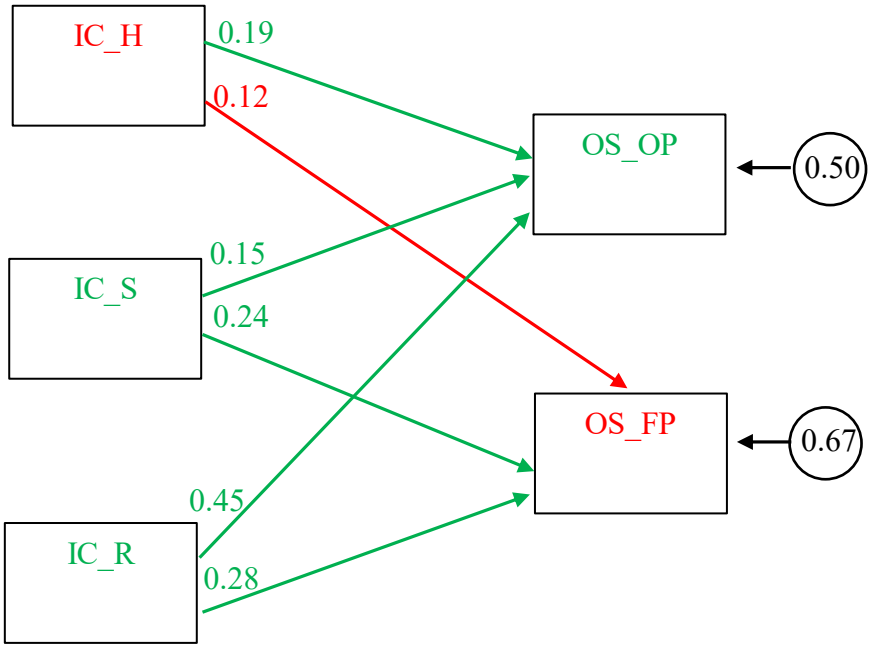


Figure 7-17 Structural Model Results for Intellectual Capital (IC) and Organisational Success (OS) for the Non-Saudi Sample

Note. The parts coloured green have a significant relationship between variables however, parts in red are not significant.

Table 7-17 Measurement Model Results for Intellectual Capital (IC) and Organisational Success (OS) for the Non-Saudi Sample

Factor/variable	Factor loading	*z*-value	Hypothesis testing results
IC_H → OS_OP	0.19	3.48**	Supported
IC_H → OS_FP	0.12	1.92	Not supported
IC_S → OS_OP	0.15	2.51*	Supported
IC_S → OS_FP	0.24	3.58***	Supported
IC_R → OS_OP	0.45	8.53***	Supported
IC_R → OS_FP	0.28	4.42***	Supported

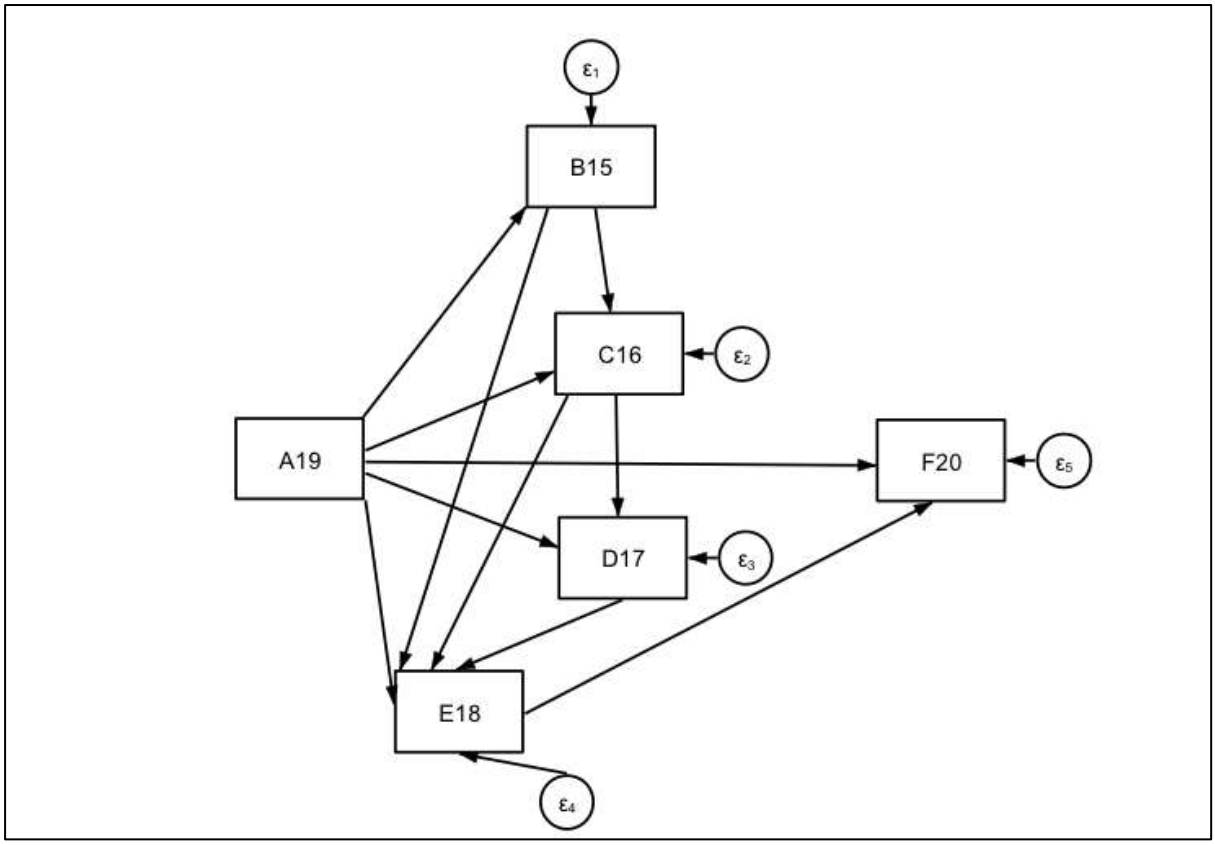
* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Note: Model fit indices X^2 =112.69, *df* = 1, AIC = 6863.667, BIC = 6901.287, CFI = 0.756, TLI = -0.708, RMSEA = 0.593

In the structural model results for intellectual capital (IC) and organisational success (OS) for the non-Saudi sample shown in Figure 7-17, all factor variables are supported between each other except for the human capital (IC_H) sub-factor, which does not support the organisational success sub-factor financial performance (OS_FP). As a result, the non-Saudi sample for the intellectual capital and organisational success model (Figure 7-17) is more strongly significant than the Saudi sample (Figure 7-16).

Table 7-18 Intellectual Capital (IC) and Organisational Success (OS) SEM Outcome for the Non-Saudi Sample

Research question 4	Factor	Factor variable relationship	Hypothesis testing
RQ4: How does intellectual capital influence the features of organisational success in terms of operational and financial performance?	Human capital and organisational success (operational performance)	IC_H → OS_OP	Supported
	Human capital and organisational success (financial performance)	IC_H → OS_FP	Not Supported
	Structural capital and organisational success (operational performance)	IC_S → OS_OP	Supported
	Structural capital and organisational success (financial performance)	IC_S → OS_FP	Supported
	Relational capital and organisational success (operational performance)	IC_R → OS_OP	Supported
	Relational capital and organisational success (financial performance)	IC_R → OS_FP	Supported


ε1
B15
C16
ε2
A19
F20
ε5
D17
ε3
E18
ε4

7.8 Measurement Model Results

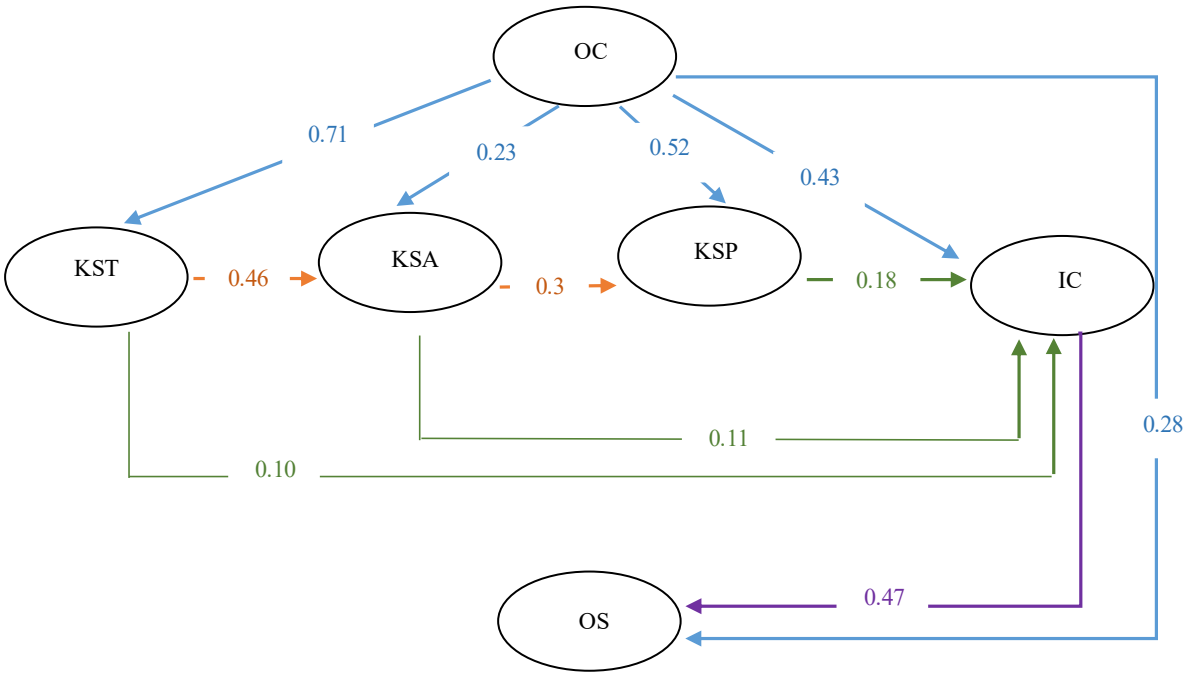


Figure 7-19 Initial Structural Model with Standardised Path Coefficient for the Saudi Sample

Table 7-19 Measurement Model Results for Path (Hypothesis) for the Saudi Sample

Path (hypothesis)	Standardised path coefficient	*z*-value	Hypothesis testing results
OC → KST	0.71	22.32***	Supported
OC → KSA	0.23	2.98**	Supported
OC → KSP	0.52	9.79***	Supported
OC → IC	0.43	5.28***	Supported
OC → OS	0.28	3.94***	Supported
KST → KSA	0.46	5.94***	Supported
KSA → KSP	0.30	5.08***	Supported
KST → IC	0.10	1.24	Not Supported
KSA → IC	0.11	1.61	Not Supported
KSP → IC	0.18	2.45*	Supported
IC → OS	0.47	6.73***	Supported

7.8.1 Measurement Model Results for the Saudi Sample Models

The results of the measurement model assessment were evaluated for the criteria listed above on behalf the Saudi sample models. The model shown in Figure 7-19 has an acceptable level of goodness of fit according to the level of model fit indices: $X^2 = 5.14$, $df = 4$, AIC = 6189.502, BIC = 6256.786, CFI = 0.998, TLI = 0.993 and RMSEA = 0.040.

This indicates that all constructs below are less significant because of the two not-supported variables of KST and KSA towards IC as shown in Figure 7-19.

- Organisational culture (OC) and its factors: interpersonal trust (T), communication (C), and technology support (TS).

  Knowledge Environment (KE) with its four main constructs:
- Knowledge-sharing type (KST) and its factors tacit (T) and explicit (E),
- Knowledge-sharing approaches (KSA) and its factors codification (C) and personalisation (P),
- Knowledge-sharing process (KSP) and its factors collection (C) and donation (D), and
- Intellectual capital (IC) and its factors: human capital (HC), structural capital (SC) and relational capital (RC).
- Organisational success factors: operational performance (OP) and financial performance (FP).

The original structural research model for the Saudi sample indicates a supported hypothesis testing result with no error level and are a high significance for its values of fit indices, except for the two constructs of knowledge-sharing type (tacit and explicit). The knowledge-sharing approaches, with its two factors (collection and donation), and the intellectual capital construct, with its three factors (human capital, structural capital and relational capital), was not significant and had a high error level so it had to be removed to increase the level of significance for the values indices.

All of the indicators (factors) had a significant loading ($p < 0.001$) on their respective constructs. The results of goodness of fit indices exhibited a moderate but acceptable level of overall model fit and therefore provided support to the overall validity of the structural model. Moreover, all of the correlation coefficients between each pair of the constructs were less than 0.85, suggesting no presence of multi-collinearity between the constructs (Kline, 2015).

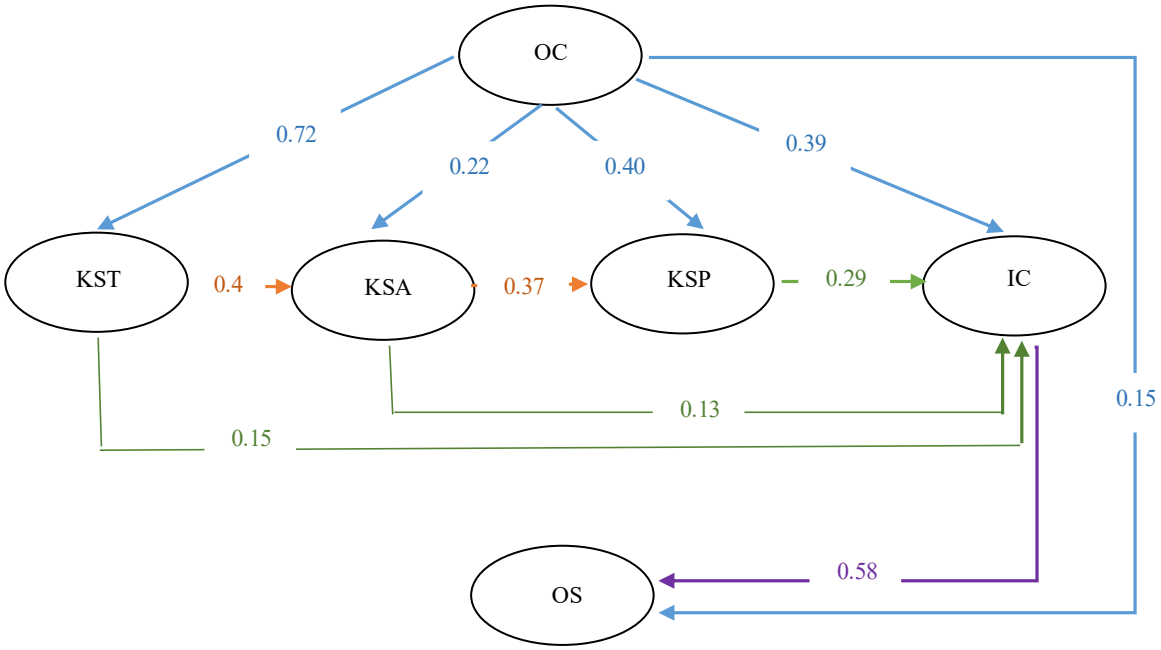


Figure 7-20 Initial Structural Model with Standardized Path Coefficient for the Non-Saudi Sample

Table 7-20 Measurement Model Results for Path (Hypothesis) for the Non-Saudi Sample

Path (hypothesis)	Standardised path coefficient	*z*-value	Hypothesis testing results
OC → KST	0.72	30.82***	Supported
OC → KSA	0.22	3.48**	Supported
OC → KSP	0.40	8.91*	Supported
OC → IC	0.39	8.27***	Supported
OC → OS	0.15	2.44*	Supported
KST → KSA	0.44	7.38***	Supported
KSA → KSP	0.37	7.98***	Supported
KST → IC	0.15	2.88***	Supported
KSA → IC	0.13	2.88***	Supported
KSP → IC	0.29	6.37***	Supported
IC → OS	0.58	10.46***	Supported

7.8.2 Measurement Model Results for the Non-Saudi Sample Models

The results of the measurement model assessment were evaluated for the criteria listed above on behalf the Saudi sample models. The model shown in Figure 7-20 has an acceptable level of goodness of fit according to the level of model fit indices: X^2 = 27.25, df = 15, AIC = 10613.563, BIC = 10692.566, CFI = 0.980, TLI = 0.924, RMSEA = 0.135.

This indicates that all constructs below are highly significant according to Figure 7-20.

- Organisational culture (OC) and its factors: interpersonal trust (T), communication (C), and technology support (TS).

  Knowledge Environment (KE) with its four main constructs:
- Knowledge-sharing type (KST) and its factors tacit (T) and explicit (E),
- Knowledge-sharing approaches (KSA) and its factors codification (C) and personalisation (P),
- Knowledge-sharing process (KSP) and its factors collection (C) and donation (D),
- Intellectual capital (IC) and its factors: human capital (HC), structural capital (SC) and relational capital (RC).
- Organisational success factors: operational performance (OP) and financial performance (FP).

The original structural research model for the non-Saudi sample indicates a supported hypothesis testing result with no error level and a high significance for its values of fit indices. This means that the structural research model for the non-Saudi sample is better than the Saudi sample and has a higher significance in terms of the relationship between its variables and a high level of fit indices.

All of the indicators (factors) had a significant loading ($p < 0.001$) on their respective constructs. The results of goodness of fit indices exhibited a moderate but acceptable level of overall model fit and, therefore, provided support to the overall validity of the structural model. Moreover, all of the correlation coefficients between each pair of the constructs were less than 0.85, suggesting no presence of multi-collinearity between the constructs (Kline, 2015). Therefore, the initial structural model with standard path coefficient for the non-Saudi sample shown in Figure 7-20 is more significant where all variables are supported between one another than the Saudi sample shown in Figure 7-19.

7.9 Final Structural Model Summary Discussion

7.9.1 Final Structural Model Summary Discussion for the Saudi Sample

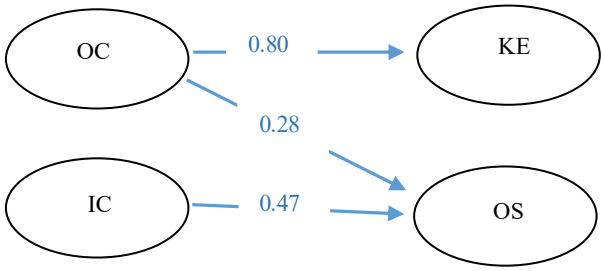


Figure 7-21 Clarifying Model Indicators for the Saudi Sample

Table 7-21 Hypothesis Testing for the Saudi Sample

Path (hypothesis)	Standardised path coefficient	*z*-value	Hypothesis testing results
OC → KE	0.80	35.55***	Supported
OC → OS	0.28	3.94***	Supported
IC → OS	0.47	6.73***	Supported

Table 7-21 compares the fit indices for the four major hierarchical models. The differences of chi-square proved to be OC and KE significance for both OC and IC towards OS at a $p < 0.05$, suggesting that all of the models parameters differ significantly. The results show an acceptable fit indices with a standard path coefficient value greater than 1.00 (Kline, 2015). As mentioned above, the principle of parsimony suggests that when there are two different models with similar explanatory grounds, the simpler one with the acceptable level of fit indices is preferred. Thus, the simpler and more parsimonious (i.e. fewer paths and a higher degree of freedom) would be the better choice. Figure 7-21 clarifies the model indicators and proves to be the simplest model structure to adequately explain the data wait until its run.

7.9.2 Final Structural Model Summary Discussion for the Non-Saudi Sample

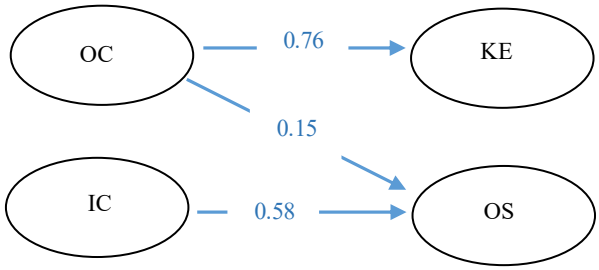


Figure 7-22 Clarifying Model Indicators for the Non-Saudi Sample

Table 7-22 Hypothesis Testing for the Non-Saudi Sample

Path (hypothesis)	Standardised path coefficient	*z*-value	Hypothesis testing results
OC → KE	0.76	38.97***	Supported
OC → OS	0.15	2.44*	Supported
IC → OS	0.58	10.46***	Supported

Table 7-22 compares the fit indices for the four major hierarchical models. The differences of chi-square proved to be that OC and KE are significant for both OC and IC towards OS at a $p < 0.05$, suggesting that all of the models' parameters differ significantly. The results show an acceptable fit indices with a standard path coefficient value greater than 1.00 (Kline, 2015). As mentioned above, the principle of parsimony suggests that when there are two different models with similar explanatory grounds, the simpler one with the acceptable level of fit indices is preferred. Thus, the simpler and more parsimonious (i.e. fewer paths and a higher degree of freedom) would be the better choice. Figure 7-22 clarifies the model indicators and proves to be the simplest model structure to adequately explain the data wait until its run.

7.10 Structural Models Results Comparison between the Saudi Models and Non-Saudi Models

Table 7-23 Structural Models Results Comparison between Saudi Models and Non-Saudi Models

Model	Saudi	Non-Saudi	*p value*	Final result
Model A	-3073.75	-5285.78	$p < 0.001$	Non-Saudi is a better fit
Model B	-4092.31	-7108.2	$p < 0.001$	Non-Saudi is a better fit
Model C	-2313.09	-3988.57	$p < 0.001$	Non-Saudi is a better fit
Model D	-3365.98	-5719.36	$p < 0.001$	Non-Saudi is a better fit
Model E	-1992.43	-3421.83	$p < 0.001$	Non-Saudi is a better fit

Note. Model A (original structural conceptual model), Model B (structural model for organisational culture), Model C (structural model for knowledge-sharing), Model D (structural model for knowledge environment) and Model E (structural model for intellectual capital and organisational success).

The results of the SEM answers the final research question:

RQ5: How do the organisational culture and knowledge environment influence the organisational success for Saudis and non-Saudis in Saudi Arabia's IT firms?

This is summarised in Table 7-23, which shows that the Saudi and non-Saudi sample are statistically different but the non-Saudi is better for all of the SEM models described in Sections 7.3 to 7.7. The models are a better fit for the non-Saudi data than the Saudi data at a chi-square significance of $p < 0.001$.

7.11 Correlation Analysis Overview

Since the study has implemented a quantitative data collection, the variables have measured a level of approximate interval characteristics. Therefore, a correlation coefficient statistic was used to measure the strength relationship between variables known as Pearson's correlation (Chen, 2007). This statistical technique is used to determine the extent to which the constructs and variables are linearly related to one another (Field, 2009; Hair et al., 2016; Jaccaed & Becker, 1997; Pallant, 2013). The extent of any linear approximation between two variables is indexed by a statistic known as Pearson's correlation coefficient *R*, which can assume any value between -1.00 and +1.00 comprehensive (Field, 2009; Jaccaed & Becker, 1997; Pallant, 2013). The sign of the strength of the relationship between variables is based on the size of the

absolute value for each variable. Pallant (2013) states that a correlation coefficient of -1.00 or +1.00, and -0.70 or +0.70 indicates a perfect and moderate correlation. In this study, the existence of a linear relationship between two variables was tested through a *z-test*, where if the hypothesis is null there would be no correlation and a reject at $\alpha = 0.001$ or 0.5 level is usually a 99% or 95% confidence respectively. Therefore, good evidence of association between the pair of variables would be certain (Berenson & Levine, 2012, Field, 2009; Pallant, 2013). The variable that was recognised with significant associations to many other variables is further analysed through a regression process. The process helps reveal if the criterion could be predicted or clarified by those variables as predictors. This study has 20 dimensions that were used to test the hypothesis and answer the main research questions.

The research model is segmented into four main factors, as indicated by the thesis title "The Influence of Organisational Culture and Knowledge Environment on Organisational Success in Saudi Arabia's IT Firms." Therefore, the hypothesis examines the relationships between the four main factors of organisational culture (OC), knowledge environment (KE), intellectual capital (IC) and organisational success (OS). Thus, the first part of the correlation analysis concerns the first part of hypothesis between the organisational culture factors (interpersonal trust (T), communication (C), and technology support (TS)) as a whole and between the knowledge environment factors: (knowledge-sharing type (KST), knowledge-sharing approaches (KSA), knowledge-sharing process (KSP) and intellectual capital (IC)). Secondly, correlation is tested between the organisational culture factors: (trust (T), communication (C), technology support (TS)) and the output of organisational success, with its two sub-factors of (operational performance (OP) and financial performance (FP)). Thirdly, the correlation between intellectual capital (IC) and its sub-factors (human capital (HC), structural capital (SC) and relational capital (RC)) and organisational success (OS) sub-factors (operational performance (OP) and financial performance (FP)) is tested. The above tested correlations will be conducted for both the Saudi and non-Saudi samples, as explained in detail in Section 7.12.

7.12 Correlation Analysis for the Saudi and Non-Saudi Samples

7.12.1 Correlation Analysis of the Influence of Organisational Culture (OC) Factors on Knowledge Environment (KE) Factors for the Saudi Sample

Table 7-24 Correlation between Organisational Culture (OC) and Knowledge Environment (KE) for the Saudi Sample

Variables	1.	2.	3.	4.	5.
1. OC_T	-	0.71*	0.55*	0.69*	0.69*
2. KST_T		-	0.62*	0.53*	0.57*
3. KSA_T			-	0.59*	0.52*
4. KSP_T				-	0.60*
5. IC_T					-

Note1: ** $p < 0.001$. OC_T = (Organisational Culture Total), KST_T = (Knowledge-sharing Types Total), KSA_T = (Knowledge-sharing Approaches Total), KSP_T = (Knowledge-sharing Process Total), IC_T = (Intellectual Capital Total).

Note2: Correlation between 0 -0.30 is considered weak, 0.30 -0.60 moderate and 0.60 - 0.99 strong.

As presented in Table 7-24, the results indicated that OC_T had moderate to strong significant positive correlations with all measures of KST_T, KSA_T, KSP_T and IC_T. Overall, the correlations were equal (i.e. did not differ significantly between Saudi and non-Saudi participants).

The Pearson correlation *r*-value between the OC and KE constructs was 0.80. The result reflected a moderate to strong significant positive correlation between OC and KE, while the *r*-values were significant at the 0.001 level (2-tailed).

Table 7-25 Correlation between (OC) and (KE) Constructs for the Saudi Sample

Construct	Pearson correlation
OC	KE
	0.80

**Correlation is significant at the 0.001 level (2-tailed)

7.12.2 Correlation Analysis of the Influence of Organisational Culture (OC) Factors on Knowledge Environment (KE) Factors for the Non-Saudi Sample

Table 7-26 Correlation between Organisational Culture (OC) and Knowledge Environment (KE) for the Non-Saudi Sample

Variables	1.	2.	3.	4.	5.
1. OC_T	-	0.72*	0.54*	0.60*	0.74*
2. KST_T		-	0.60*	0.63*	0.69*
3. KSA_T			-	0.59*	0.60*
4. KSP_T				-	0.69*
5. IC_T					-

Note1: ** $p < 0.01$. OC_T = (Organisational Culture Total), KST_T = (Knowledge-sharing Types Total), KSA_T = (Knowledge-sharing Approaches Total), KSP_T = (Knowledge-sharing Process Total), IC_T = (Intellectual Capital Total).

Note2: Correlation between 0 -0.30 is considered weak, 0.30 -0.60 moderate, and 0.60 - 0.99 strong.

As presented in Table 7-26, the results indicated that OC_T had moderate to strong significant positive correlations with all measures of KST_T, KSA_T, KSP_T and IC_T. Overall, the correlations were equal (i.e. did not differ significantly between the Saudi and non-Saudi participants).

The Pearson's correlation *r*-value between the OC and KE constructs was 0.76. The result reflected a moderate to strong positive correlation between OC and KE, while the *r*-values were significant at the 0.01 level (2-tailed).

Table 7-27 Correlation between (OC) and (KE) Constructs for the Non-Saudi Sample

Construct	Pearson correlation
OC	KE
	0.76

**Correlation is significant at the 0.01 level (2-tailed)

7.12.3 Correlation Analysis of the Influence of Organisational Culture (OC) Factors on Organisational Success (OS) Factors for the Saudi Sample

Table 7-28 Correlation between Organisational Culture (OC) and Organisational Success (OS) for the Saudi Sample

Variables	1.	2.	3.	4.
1. OC_T	-	0.61*	0.58*	0.55*
2. OS_T	-	-	0.93*	0.93*
3. OS_OP		-	-	0.72*
4. OS_Fin				-

Note1: ** $p < 0.01$. OC_T = (Organisational Culture Total), OS_T = (Organisational Success_Total), OS_OP = Organisational Success_ (Operational Performance), OS_Fin = Organisational Success_ (Financial Performance).

Note2: Correlation between 0 - 0.30 is considered weak, 0.30 - 0.60 moderate and 0.60 - 0.99 is strong.

As presented in Table 7-28, the results show that OC_T had a moderate to strong positive correlations with the OS variables' (OS_Operational and OS_Financial) performance, which also indicates a strong positive correlation. Overall, the correlations were equal (i.e. did not differ significantly between the Saudi and non-Saudi participants).

The Pearson's correlation *r*-value between the OC and OS constructs was 0.28. The result reflects a strong positive correlation between OC and OS, while the *r*-values were significant at the 0.01 level (2-tailed).

Table 7-29 Correlation between (OC) and (OS) Constructs for the Saudi Sample

Construct	Pearson correlation
OC	OS
	0.28

**Correlation is significant at the 0.01 level (2-tailed)

7.12.4 Correlation Analysis Influence of the Organisational Culture (OC) Factors on the Organisational Success (OS) Factors for the Non-Saudi Sample

Table 7-30 Correlation between Organisational Culture (OC) and Organisational Success (OS) for the Non-Saudi Sample

Variables	1.	2.	3.	4.
1. OC_T	-	0.57*	0.59*	0.47*
2. OS_T		-	0.93*	0.93*
3. OS_OP			-	0.72*
4. OS_Fin				-

Note1: ** $p < 0.01$. OC_T = (Organisational Culture Total), OS_T = (Organisational Success_Total), OS_OP = Organisational Success_ (Operational Performance), OS_Fin = Organisational Success_ (Financial Performance).

Note2: Correlation between 0 - 0.30 is considered weak, 0.30 - 0.60 moderate and 0.60 - 0.99 is strong.

As presented in Table 7-30, results show that OC_T had moderate to strong positive correlations with OS variables, however the correlation with OS_Financial was only moderate. Again, OS_Operational and OS_Financial performance had a strong positive correlation. Overall, the correlations were equal (i.e. did not differ significantly between the Saudi and non-Saudi participants).

The Pearson's correlation *r*-value between the OC and OS constructs was 0.15. The result reflected a moderate to strong positive correlation between OC and OS, while the *r*-values were significant at the 0.01 level (2-tailed).

Table 7-31 Correlation between (OC) and (OS) Constructs for the Non-Saudi Sample

Construct	Pearson correlation
OC	OS
	0.15

**Correlation is significant at the 0.01 level (2-tailed)

7.12.5 Correlation Analysis of the Intellectual Capital (IC) Factors on the Organisational Success (OS) Factors for the Saudi Sample

Table 7-32 Correlation between Intellectual Capital (IC) and Organisational Success (OS) for the Saudi Sample

Variables	1.	2.	3.	4.	5.	6.	7.
1. IC_T	-	0.84*	0.87*	0.88*	0.67*	0.64*	0.60*
2. IC_Hum		-	0.58*	0.60*	0.49*	0.48*	0.42*
3. IC_Stru			-	0.68*	0.61*	0.56*	0.58*
4. IC_Rel				-	0.62*	0.61*	0.54*
5. OS_T					-	0.93*	0.93*
6. OS_Op						-	0.72*
7. OS_Fin							-

Note1: ** $p < 0.001$. IC_T = (Intellectual Capital_Total), IC_Hum = (Intellectual Capital_Human), IC_Stru = (Intellectual Capital_Structral), IC_Rel = (Intellectual Capital_Relational), OS_T = (Organisational Success_Total), OS_Op = Organisational Success_ (Operational Performance), OS_Fin = Organisational Success_ (Financial Performance).

Note2: Correlation between 0 - 0.30 is considered weak, 0.30 - 0.60 moderate and 0.60 - 0.99 is strong.

As presented in Table 7-32, the results showed strong to moderate positive correlations between all aspects of IC and OS. Overall, the correlations were equal (i.e. did not differ significantly between Saudi and non-Saudi participants). The Pearson's correlation *r*-value between the IC and OS constructs was 0.47. The result reflected a strong to moderate positive correlation between IC and OS, while the *r*-values were significant at the 0.001 level (2-tailed).

Table 7-33 Correlation between (IC) and (OS) Constructs for the Saudi Sample

Construct	Pearson correlation
IC	OS
	0.47

**Correlation is significant at the 0.001 level (2-tailed)

7.12.6 Correlation Analysis of the Intellectual Capital (IC) Factors on Organisational Success (OS) Factors for the Non-Saudis Sample

Table 7-34 Correlation between Intellectual Capital (IC) and Organisational Success (OS) for the Non-Saudi Sample

Variables	1.	2.	3.	4.	5.	6.	7.
1. IC_T	-	0.87*	0.90*	0.87*	0.69*	0.70*	0.57*
2. IC_Hum		-	0.67*	0.63*	0.56*	0.58*	0.46*
3. IC_Stru			-	0.68*	0.60*	0.59*	0.52*
4. IC_Rel				-	0.65*	0.68*	0.53*
5. OS_T					-	0.93*	0.93*
6. OS_Op						-	0.72*
7. OS_Fin							-

Note1: ** $p < 0.001$. IC_T = (Intellectual Capital_Total), IC_Hum = (Intellectual Capital_Human), IC_Stru = (Intellectual Capital_Structral), IC_Rel = (Intellectual Capital_Relational), OS_T = (Organisational Success_Total), OS_Op = Organisational Success_ (Operational Performance), OS_Fin = Organisational Success_ (Financial Performance).

Note2: Correlation between 0 - 0.30 is considered weak, 0.30 - 0.60 moderate and 0.60 - 0.99 is strong.

As presented in Table 7-34, the results show a strong to moderate positive correlations between all aspects of IC and OS. Overall, the correlations were equal (i.e. did not differ significantly between Saudi and non-Saudi participants).

The Pearson's correlation *r*-value between IC and OS constructs was 0.58. The result reflected a strong to moderate positive correlation between IC and OS, while the *r*-values were significant at the 0.001 level (2-tailed).

Table 7-35 Correlation between (IC) and (OS) Constructs for the Non-Saudis Sample

Construct	Pearson correlation
IC	OS
	0.58

**Correlation is significant at the 0.001 level (2-tailed)

7.13 Correlation Analysis Summary

The correlation analysis is segmented into three parts for both the Saudi and non-Saudi sample. Firstly, the correlation is analysed between organisational culture total (OC_T) factors with the knowledge environment factors, which are knowledge-sharing type total (KST_T), knowledge-sharing approaches total (KSA_T), knowledge-sharing process total (KSP_T) and intellectual capital total (IC_T). As the correlation between organisational culture and knowledge environment presented in Table 7-24 for the Saudi sample results shows, OC_T had a moderate to strong, significant positive correlations with all measures of KST_T, KSA_T, KSP_T and IC_T. The Pearson correlation *r*-value between the organisational culture and knowledge environment constructs was 0.80 for the Saudi sample shown in Table7-25. The result reflected a moderate to strong significant positive correlation between organisational culture and knowledge environment, while the *r*-values were significant at the 0.001 level (2-tailed). On the other hand, for the non-Saudi sample presented in Table 7-26, the results indicated that OC_T had a moderate to strong, significant positive correlations with all measures of KST_T, KSA_T, KSP_T and IC_T. The Pearson correlation *r*-value between organisational culture and knowledge environment for the non-Saudi constructs was 0.76 as shown in Table 7-27. The result reflected a moderate to strong positive correlation between organisational culture and knowledge environment, while the *r*-values were significant at the 0.01 level (2-tailed). Overall the correlations were equal (i.e. did not differ significantly between Saudi and non-Saudi participants).

Secondly, the correlation between organisational culture and organisational success as presented in Table 7-28 for the Saudi sample results showed that OC_T had a moderate to strong positive correlations with the organisational success variables, OS_Operational and OS_Financial performance, which also indicates a strong positive correlation. The Pearson correlation *r*-value between organisational culture and organisational success constructs was 0.28 for the Saudi sample (shown in Table 7-29). The result reflected a strong positive correlation between organisational culture and organisational success, while the *r*-values were significant at the 0.01 level (2-tailed). However, the non-Saudi sample results presented in Table 7-30 showed that OC_T had moderate to strong positive correlations with the organisational success variables, however the correlation with the OS_Financial performance variable was only moderate. Again, OS_Operational and OS_Financial had a strong positive correlation. The Pearson correlation *r*-value between organisational culture and organisational success constructs was 0.15 for the non-Saudi sample (shown in Table7-31). The result

reflected a moderate to strong positive correlation between organisational culture and organisational success for the non-Saudi sample, while the *r*-values were significant at the 0.01 level (2-tailed). Overall, the correlations were equal (i.e. did not differ significantly between Saudi and non-Saudi participants).

Thirdly, the correlation between intellectual capital and organisational success for the Saudi sample results, as presented in Table 7-32, show strong to moderate positive correlations between all aspects of intellectual capital and organisational success. The Pearson correlation *r*-value between intellectual capital and organisational success constructs was 0.47 for the Saudi sample as shown in Table 7-33. The result reflected a strong to moderate positive correlation between intellectual capital and organisational success, while the *r*-values were significant at the 0.001 level (2-tailed). Moreover, the non-Saudi sample results, presented in Table 7-34, showed strong to moderate positive correlations between all aspects of intellectual capital and organisational success. The Pearson correlation *r*-value between the intellectual capital and organisational success constructs was 0.58 for the non-Saudi sample (shown in Table 7-35). The results reflected a strong to moderate positive correlation between intellectual capital and organisational success for the non-Saudi sample, while the *r*-values were significant at the 0.001 level (2-tailed). Overall, the correlations were equal (i.e. did not differ significantly between Saudi and non-Saudi participants).

7.14 Significance and Contribution

The SEM analysis differentiates the research model presented in Figure 7-1 into two main comparisons between Saudi and non-Saudis in Saudi Arabia's IT firms. The first set of Model A comparison was for the original structural research model as presented in AMOS for the Saudi sample (shown in Figure 7-4) and the non-Saudi sample (shown in Figure 7-5). This comparison supports the results for both models in order to identify the conflict relationship between variables and point out the variables main significance. All factor variables within the original structural research model for the Saudi sample shown in Figure 7-4 are supported between their relationships and are strongly significant except for knowledge-sharing type with intellectual capital and knowledge-sharing approaches with intellectual capital, which are not supported and are less significant (shown in Table 7-1). Therefore, all factor variables within the original structural conceptual model for the non-Saudi sample shown in Figure 7-5 are supported between their relationships and are highly significant. Therefore, the original

structural research model for the non-Saudi sample shown in Table 7-2 is more significant than the Saudi sample shown in Table 7-1.

The second set of Model B comparisons between the Saudi and non-Saudi samples is the organisational culture structural model result. The Saudi sample shown in Figure 7-7 presents that the organisational culture interpersonal trust factor (OC_T) is not supported with knowledge-sharing type, knowledge-sharing approaches and both organisational success factors. The results indicate that the Saudis have a conflict with interpersonal trust towards sharing tacit and explicit knowledge within the organisation as well as with codifying knowledge and personalisation of tools for the sake of knowledge transfer. Another trust issue that Saudis face is seeing the benefit of organisational success when it comes to the operational part of the organisation or gaining trust from a financial perspective. They consider it a confidential point of view that should not be shared between co-workers unless they are part of the same department (see Table 7-3). However, the non-Saudi sample shown in Figure 7-8 illustrates that almost all factor variables are supported between each other and are considered strongly significant except for the organisational culture interpersonal trust factor (OC_T), which is not supported with knowledge-sharing approaches. This shows that non-Saudis also do not support sharing tacit and explicit knowledge within their organisation. Another unsupported factor is the organisational culture technology support (OC_TS) with the knowledge-sharing approaches factor. This concludes that both interpersonal trust and technology support do not support knowledge-sharing approaches, which is considered less significant in comparison with the other factor variables shown in Figure 7-8. Therefore, the non-Saudi sample shown in Figure 7-8 is more significant than the Saudi sample shown in Figure 7-7 for the structural model result for the organisational culture.

The third set of Model C comparisons between Saudi and non-Saudi is the knowledge-sharing structural model result. For the Saudi sample, shown in Figure 7-10, all factor variables are supported between one another and are considered strongly significant. However, for the non-Saudi sample, shown in Figure 7-11, all factor variables are supported between one another and are considered strongly significant, except for the factor variable between knowledge-sharing approaches collection (KSA_C) and knowledge-sharing approaches donation (KSA_D) which illustrates that non-Saudis do not consider the collection and donation of knowledge significant within the organisation for the sake of knowledge-sharing. Therefore, the Saudi sample (Figure 7-10) is more significant than the non-Saudi sample (Figure 7-11) for the structural model result for the knowledge-sharing model.

The fourth set of Model D comparisons between the Saudi and non-Saudi samples is the knowledge environment structural model result. For the Saudi sample (shown in Figure 7-13) all factor variables are not supported between one another and are considered less significant, with the exception of the knowledge-sharing type explicit (KST_E) factor, which supports both human capital (IC_H) and structural capital (IC_S) and the knowledge-sharing type tacit (KST_T) factor, which only supports the relational factor (IC_R). The knowledge-sharing process donation (KSP_D) factor supports both human capital (IC_H) and relational capital (IC_R). In the non-Saudi sample (shown in Figure 7-14), all factor variables are supported between one another except for knowledge-sharing type tacit (KST_T), which does not support the structural capital (IC_S). Consequently, the knowledge-sharing approaches sub-factors (codification and personalisation) do not support any of the intellectual capital factors: human capital (IC_H), structural capital (IC_S), and relational capital (IC_R). However, knowledge-sharing process collection (KSP_C) does not support the human capital factor (IC_H), from the intellectual capital point of view and knowledge-sharing process donation (KSP_D) does not support the relational capital (IC_R) from the intellectual capital sub-factors. This result shows that the non-Saudi sample shown in Figure 7-14 for the knowledge environment factors is more strongly significant than the Saudi sample shown in Figure 7-13.

The fifth set of Model E comparisons between the Saudi and non-Saudi samples is the intellectual capital and organisational success structural model result. The Saudi sample, shown in Figure 7-16, shows that all factor variables are supported between one another except for the human capital (IC_H) sub-factor, which does not support either of the organisational success sub-factors: operational performance (OS_OP) and financial performance (OS_FP). The non-Saudi sample, shown in Figure 7-17, shows that all factor variables are supported between one another except for the human capital (IC_H) sub-factor, which does not support the organisational success sub-factor financial performance (OS_FP). As a result, the non-Saudi sample shown in Figure 7-17 for the intellectual capital and organisational success model proves that it is strongly significant than the Saudi sample shown in Figure 7-16.

The SEM analysis answers the final research question presented below:

RQ5: How do the organisational culture and knowledge environment influence the organisational success for Saudis and non-Saudis in Saudi Arabia's IT firms?

This is summarised in Table 7-15, which shows that the Saudi and non-Saudi samples are statistically different but the non-Saudi sample is better for all of the SEM models explained

previously in sections 7.3 – 7.7. The models are a better fit for the non-Saudi data compared to the Saudi data at a chi-square significance of $p < 0.001$.

7.15 Chapter Summary

In this chapter, SEM was used to analyse and assess the results for the research model developed in Chapter 3. The chapter started by presenting a full overview of SEM which is analytically utilised to assess and enhance the theoretical developed model shown in Figure 7-1. The analytical procedures embraced an assessment of two main SEM components: the measurement model and the structural model. The results of the factors structure derived from the previous chapter, Chapter 6, supported the measurement model to condense the analytical complexity. The assessment results designated the specified measurement models had acceptable levels of fit, convergent of validity, discriminate validity and unidimensionality. Then, the analysis moved forward with an assessment of the structural models for both the Saudi and non-Saudi samples, which is the second key component of the SEM analysis. This phase of analysis assessed the hypothesised relationships between the model constructs, conducted a hierarchical analysis to produce the final model and tested for any mediating effect on the models. The results from the structural models' assessment delivered an adequate answer for the final research question RQ5. In conclusion, the Saudi and non-Saudi samples are statistically different but the non-Saudi sample is better for all of the SEM models explained in Sections 7.3 to 7.7. The models are a better fit for the non-Saudi data which make them more significant compared to the Saudi models at a chi-square significance of $p < 0.001$. The original structural research model as presented in AMOS for the Saudi sample in Figure 7-4 has two relationship variables, (KST → IC) and (KSA → IC) which were not supported and caused the structural model to be less significant than the non-Saudi structural model in Figure 7-5. Finally, the original structural research model as presented in AMOS for the non-Saudi sample in Figure 7-5 has a strong and significant relationship between its variables and its entire hypothesis testing results are supported which makes it more significant than the Saudi sample in Figure 7-4.

The correlation analyses are segmented into three parts: organisational culture and knowledge environment; organisational culture and organisational success; and intellectual capital and organisational success for both the Saudi and non-Saudi samples. First, the correlations between organisational culture and knowledge environment for both the Saudi and non-Saudi sample (Table 7-24 and Table 7-26) show that OC_T had moderate to strong significant

positive correlations with all measures of KST_T, KSA_T, KSP_T and IC_T. The second correlation between organisational culture and organisational success for both the Saudi and non-Saudi samples (Tables 7-28 and 7-30) show that OC_T had moderate to strong positive correlations with organisational success variables (OS_Operational and OS_Financial), which also indicates a strong positive correlation. The third correlation between intellectual capital and organisational success presented in Tables 7-33 Table 7-34 showed a strong to moderate positive correlations between all aspects of IC and OS. Overall, the correlations were equal (i.e. did not differ significantly between Saudi and non-Saudi participants). The following chapter, Chapter 8, presents Phase B of the analysis, which is the qualitative analysis. This type of analysis validates the research model through an interview method of case studies and a thematic analysis of the open questions in the survey questionnaire.

Chapter 8: Model Validation

8.1 Introduction

In this chapter, the qualitative analysis of the research model is verified and discussed. The case study evidence collected from conducting 13 interviews was analysed using two main streams: first, a within-case analysis was conducted, which was followed by a cross-case analysis. The within-case analysis provides information and perceptions into how the research model and its constructs are perceived in the Saudi Arabian IT industry. The cross-case analysis validates the results from multiple case studies by using an outline corresponding technique that connects the data from the theoretical propositions by comparing patterns of the actual values of variables to those predicted in the hypothesis in order to answer the main research questions of the study. In this study, the validation procedure involved interviewing 13 different executives and managers from Saudi Arabian IT firms (Table 8-1).

The aim and elements of the model validation procedure are identified and related to the analysis approaches in Section 8.2. Section 8.3 describes the different analytical techniques engaged for the analysis of within-case data and for cross-case patterns assessments. The results of both within-case analysis and cross-case analysis are presented in Section 8.4, then the thematic analysis of the survey questionnaire's open questions is analysed in Section 8.5. The significance and contribution of the qualitative analysis is identified in Section 8.6 and Section 8.7 summarises the chapter.

8.2 Qualitative Validation of Research Model

The qualitative validation of the research model resolves whether the outcomes resulting from the quantitative assessment illustrated in the previous chapters confirm and support the findings under investigation. Then, an analytical generalisation approach utilises the explanatory case study research, which detects the relationships between variables. Yin (2013) states that the term "explanatory" refers to the testing of the assumed set of casual links specified by the model, therefore it is a variation of scale put together for each construct in order to complete the case study by identifying the functioning of variables. As stated in Chapter 4, semi-structured interviews were used to query certain variables designating each of the model's constructs and factors. The case studies help validate the model developed in the quantitative analysis, with all measures based on the results found in Chapter 5, 6 and 7. This process confirms that the data gathered from the case studies are compatible with the quantitative survey, resulting in greater accuracy for the model validation. In addition to this, the evaluation

scales collected from the factor analysis are engaged to develop an interview protocol (shown in Appendix F).

8.3 Qualitative Data Analysis for Research Model Validation

The qualitative data analysis for the research model validation combines two major steps: the within-case analysis and the cross-case analysis (explained in Section 4.16.20). First, the within-case study analysis evaluate the data gathered and the findings from each case study (shown in Table 8-1). The within-case analysis of the case studies is shown in Table 8-2 and their case ratings are evaluated. Then, a comparison between the within-case analyses of case studies is shown in Section 8.3.2 and a detailed description of the factors for each case is presented in Sections 8.3.3 to 8.3.5. The cross-case findings are presented as outcomes which show whether the derived model is clarified by the case studies in Section 8.3.6 and the effect sizes for the relationship between models' constructs for the Saudi sample is shown in Table 8-3 and for the non-Saudi sample in Table 8-4.

8.3.1 Case Studies Profile

The firms were selected from the top 1000 firms listed by the Ministry of Labour. The researching previously worked at the Ministry, which helped when contacting each firm through email and scheduling interviews with either executives or managers within the IT firms located in different regions. In the qualitative component of the study, 13 IT firms in Saudi Arabia took part in the interview process between 23 July 2017 and 23 October 2017. The 13 case study participants are classified as firms A, B, C, D, E, F, G, H, I, J, K, L and M in this study (Table 8-1). Data on the firm's profiles were collected, included the organisation's name, size, and number of employees at the company. In addition to this, the job titles of the interviewees and their total years of experience within the organisation and educational background were obtained. This information along with the interview time duration is included in Table 8-1. These interviewees were selected based on recommendations from the human resources department of each organisation regarding their specialisation in the field of expertise. Each interview was conducted in English as a one-to-one meeting in the offices of each IT organisation in Saudi Arabia. The organisations are considered a good sample mix in terms of size and with a different range of number of employees, job titles, years of experience and educational level for all interviewees.

Table 8-1 Case Study Profiles

Case study	Organisation name	Size	No of employees	Job title	Years of experience	Education level	Duration of interview
A	Saudi Tele Communication	Large	20,000	Sales Director, Western and Southern Enterprise	15 years	Masters degree	45 minutes
B	ORACLE	Medium	400	Vice President	16 years	Bachelor's degree	55 minutes
C	IT Security Training Solutions	Medium	500	Territory Account Manager	14 years	Bachelor's degree	50 minutes
D	EMC2	Large	138,000	District Manager, Western Province	19 years	Bachelor's degree	54 minutes
E	IBM	Medium	400	Cloud Executive Leader	16 years	Bachelor's degree	57 minutes
F	Microsoft	Large	700	Major Account Manager	15 years	Master's degree	51 minutes
G	AT Co.	Large	500	Head of IT Dep	17 years	Bachelor's degree	45 minutes
H	Savola Co	Large	6,000	IT Dep Manager	8 years	Master's degree	42 minutes
I	Egg Dancer	Small	150	CEO	23 years	Master's degree	59 minutes
J	GE	Medium	4,500	Lead System Analyst	13 years	Bachelor's degree	46 minutes

K	Alfa People	Large	1,500	Escalation Manager	7 years	Master's degree	58 minutes
L	IT Human Solutions	Large	900	Public Sales Manager	14 Years	Bachelor's degree	41 minutes
M	C Telecom	Large	2,300	Cloud Technical Manager	15 years	Master's degree	59 minutes

8.3.2 Within-Case Analysis of Case Studies

The within-case analysis combines the collected data from all 13 interviews. In order to verify each interview within the case study, a reference number is assigned for each variable and the contents were coded so they are categorised into appropriate factors. The set of codes was based on the abbreviation of the model factor defined in Chapter 4. In this study, a descriptive coding system was used to help categorise a large amount of information into relevant model factors, which refers to the model factors to a segment of text (Miles and Huberman, 2013). After the coding system, an analysis approach documented all coding information in an evidentiary-based method known as the tabular methodology (Miles and Huberman, 2013). The tabular method generates a metrics of categories representing the model factors where the tables hold only raw evidence (Yin, 2013). The coded information in the evidence table is connected to the reference number in order to allow cross-referencing. Then, each factor in the model is categorised into one of the following value descriptors: high, medium or low. A series of function scaling standards categorises the factors into one of the three descriptors in order to guarantee the reliability consistency of the rating (shown in Appendix F). The criteria are presented according to the key variable resulting from the factor analysis. Each factor has a particular value descriptor that demonstrates the relevant criteria, then each individual factor is qualitatively summed after being scaled for the total rating of their construct (Zinatelli, 1996).

The within-case study results are summed up in Table 8-2. The rating for each construct and its factors for all of the 13 case studies is considered the main aspect of the within-case results. Each factor rating is derived from the qualitative findings for each organisation that was collected in order to represent the overall ratings of the construct. The rating are coded as follows: (H) for high, (M) for medium and (L) for low.

Table 8-2 Within-Case Analysis Results

Construct/factors	Case ratings												
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**
1. Organisational culture													
Interpersonal trust	H	H	H	H	H	H	L	L	M	M	H	H	H
1. Level of trust													
2. Sharing feelings and point of views with colleagues	M	M	M	H	H	M	M	L	H	L	H	M	H
Communication	H	H	H	H	H	H	H	H	H	H	H	M	H
1. Types of communication													
2. Encouraged to share knowledge with colleagues	M	H	L	H	H	H	M	H	L	M	H	H	H
3. Resources the organisation uses for knowledge-sharing	H	H	H	H	H	H	H	H	L	L	H	H	H
Technology support	H	H	H	H	H	H	M	H	H	H	H	H	M
1. Rank of technology support													
2. Tools used for knowledge-sharing	H	H	M	H	H	H	M	H	L	H	H	H	H
3. Electronic storage used to access data	L	L	H	H	H	H	H	H	H	M	H	H	H
2. Knowledge environment													
a. Knowledge-sharing Type	M	M	H	M	M	H	H	H	H	H	L	H	M
Explicit													

1. Sharing explicit knowledge through discussion													
2. Easy to share knowledge between co-workers	L	H	L	H	H	H	H	H	H	H	M	H	M
Tacit 1. Tacit knowledge-sharing is developed through human experiences	H	L	L	H	M	H	H	H	M	M	M	H	M
2. Limited awareness for tacit knowledge-sharing	M	L	M	H	H	H	H	M	L	M	H	H	L
b. Knowledge-sharing approaches **Codification** 1. Significance of documentation for knowledge transferability	L	L	M	L	H	H	H	H	M	H	H	H	H
Personalisation 1.Significance of personalisation as a tool for transferring knowledge	L	M	L	H	M	H	M	H	M		H	H	H
c. Knowledge-sharing process **Collection** 1. Sharing information with colleagues	H	M	L	M	M	H	H	H	L	L	H	H	H
Donation 1. Learning new information	M	M	H	H	H	H	H	L	L	H	H	H	H

d. Intellectual capital **<u>Human capital</u>** 1. Investment in human resources	L	H	H	M	H	H	M	H	L	M	M	H	H
<u>Structural capital</u> 1. Tools that help employees complete their tasks	H	H	M	H	H	H	M	H	L	H	H	H	M
<u>Relational capital</u> 1. Monitoring long-term relationship with customers, stakeholders and strategic partners	M	H	H	H	H	H	M	H	M	H	H	M	H
3. Organisational success **<u>Operational performance</u>** 1. Evaluation of organisational success	M	H	M	H	H	H	H	L	H	M	H	H	H
<u>Financial performance</u> 1. Evaluation of organisational success	H	H	H	H	H	H	H	L	H	M	H	H	H

8.3.3 Organisational Culture (OC) Factors

The OC (T) rating had a mixed result, with Firms A, B, C, D, E, F, K, L and M ranked as having a high level of trust, Firms I and J ranked as having a medium level of trust and Firms G and H ranked as having a low level of trust within their organisations. However, Firms D, E, I, K and M showed a high rank in sharing feelings and points of view with colleagues, where Firms A, B, C, F, G and L ranked as medium and both Firms H and J ranked as low.

In the second factor of OC (C) the ratings of all of the firms had a high level in the types of communications except for Firm L, which had a medium rank. As per the encouragement of knowledge-sharing with colleagues, most of the firms (B, D, E, F, H, K, L and M) had a high rank, except for A, G and J, who had a medium rank and Firms C and I, who ranked low. All firms ranked as high for the usage of their organisations resources that support the knowledge-sharing aspect except for Firms I and J, which are ranked as low.

In the final factor of OC (TS), all firms had a high rank of technology support within their organisation except for Firms G and M, which ranked as medium. This factor also showed that Firms A, B, D, E, F, H, J, K, L and M had a high rank in the usage of tools for the sake of knowledge-sharing, while Firms C and G had a medium rank and Firm I has a low rank. As for the electronic storage used to access data, most firms (C, D, E, F, G, H, I, J, K, L and M) had a high rank, Firm J has a medium rank and, lastly, both Firms A and B had a low rank.

8.3.4 Knowledge Environment (KE) Factors

The KST (E) factor had mixed results. Firms C, F, G, H, I, J and L had a high rank in believing that sharing explicit knowledge is done through discussion, while Firms A, B, D, E and M had a medium rank and Firm K had the only low rank. The ease of sharing knowledge between co-workers is ranked high for Firms A, D, E, F, G, H, I, J and L, medium for Firms K and M and low for Firms A and C.

The second factor for KST (T) has a mixed result. Firms A, D, F, G, H and L had a high rank for tacit knowledge-sharing developed through human experience, Firms E, I, J, K and M had a medium rank and Firms B and C had a low rank. For limited awareness of tacit knowledge-sharing, Firms D, E, F, G, K and L had a high rank, Firms A, C, H, and J had a medium rank and Firms B, M and I had a low rank.

In KSA (C) the significance for codification (documentation) is high for most firms (Firms E, F, G, H, J, K, L and M), with Firms C and I ranked medium and Firms A, B and D ranked low.

For the second factor of KSA (P), in the significance for personalisation as a tool for the transferability of knowledge, Firms D, F, H, K, L and M are ranked high, Firms B, E, G, I and J are ranged medium and Firms A and C are ranked low.

In this factor for KSP (C), Firms A, F, G, H, K, L and M had a high rank for sharing information with their colleagues, Firms B, D and E had a medium rank and Firms C, I and J had a low rank.

In the KSP (D) factor, Firms C, D, E, F, G, J, K, L and M ranked high for learning new information when they are donating knowledge within the organisation, while Firms A and B had a medium rank and Firms H and I had a low rank.

The first factor of IC (H) is human capital. Investment in human resources ranked high for Firms B, C, E, F, H, L and M, medium for Firms D, G, J and low for Firms A and I.

In the IC (S), Firms A, B, D, E, F, H, J, K and L were ranked high for using tools that help employees in completing their daily tasks. Firms C, G and M were ranked medium and Firm I was the only one to be ranked low.

For the final factor of IC (R), Firms A, B, D, E, F, H, J, K and L were ranked high for maintaining long-term relationships with customers, stakeholders and strategic partners and Firms A, G, I and L were ranked low.

8.3.5 Organisational Success (OS) Factors

Finally, the OS (OP) factor is the most significant for Firms B, D, E, F, G, I, K, L and M, who ranked high for the evaluation of their organisation's success in terms of its operational performance. Firms A, C and I were ranked medium and only Firm H was ranked as low.

The OS (FP) firms A, B, C, D, E, F, G, I, K, L and M were ranked high for the evaluation of their organisation's success in terms of financial performance. Only Firm J was ranked as medium and Firm H ranked as low.

8.3.6 Cross-Case Analysis of Case studies

As stated in Chapter 4, confirming the results obtained from multiple case studies by employing a pattern-matching technique was the main goal of the cross-case analysis which matched the results from the study with the theoretical propositions. This technique involves developing a relationship pattern of the actual variables against those foreseen by the research model. The main aspect of cross-case analysis is the development of a series of relationship patterns anticipated by the experimental model derived from the previous quantitative evaluation.

This research's model was discussed in Chapter 7. The predicted patterns were categorised as high (H), medium (M), and low (L) value descriptors. Organisational culture (OC) is categorised as an exogenous independent construct. The four following constructs that make up the knowledge environment (KE) – knowledge-sharing type (KST), knowledge-sharing approaches (KSA) and knowledge-sharing process (KSP) – and intellectual capital (IC) are all considered mediating constructs. Organisational success (OS) is specified as an endogenous dependent construct. The constructs were established through following the paths represented in the research model and given their standardised path coefficients. Cohen's (1988) effect size criteria was the categorising method for standardised path coefficients, which are classified as follows: small effect if its value is 0.10 – 0.29, medium effect if its value is 0.30 – 0.49, and a large effect if its value is > 0.50. The categorisations are shown in Table 8-3 for the Saudi sample and Table 8-4 is for the non-Saudi sample. This process resulted in developing four main predicted patterns, shown in Figure 8-1. The confirmation of each prediction is based on the key descriptors (i.e. high, medium and low) which helps remove any crafty patterns, as the analysis targets a cross-match or mismatch between the case-based patterns and the model predicted patterns to be nominated. Therefore, Cohen's criteria shows the results of the final models for both the Saudi and non-Saudi samples' relationships between their constructs, as discussed previously in Chapter 7. Table 8-3 classifies the effect sizes for relationship between the model constructs for the Saudi sample (OC → KE) which shows a large effect, small effect for (OC → OS), and a medium effect for (IC → OS) based on their standardised path coefficients. Table 8-4 explains the effect sizes for relationship between the model constructs for the non-Saudi sample (OC → KE), which shows a large effect, small effect for (OC → OS), and a large effect for (IC → OS) based on their standardised path coefficients. This approach was explained in Section 4.16.4.

In Table 8-3, the classification of effect size based on Cohen's criteria shows a mixed effect between the construct based on the standardised path coefficient of the model for the Saudi sample derived from Figure 7-21 in chapter 7, which makes it less significant.

Table 8-3 Classification of Effect Sizes for Relationships between Models' Constructs for the Saudi Sample

Relationship	Standardised path coefficient of the model for Saudi sample	Classification of effect size based on Cohen's criteria
OC → KE	0.80	Large effect
OC → OS	0.28	Small effect
IC → OS	0.47	Medium effect

In Table 8-4, the classification of effect size based on Cohen's criteria shows a large to medium effect between the constructs based on their standardised path coefficient of the model for the non-Saudi sample derived from Figure 7-22 in Chapter 7. This makes it more significant than the Saudi sample shown in Figure 7-21.

Table 8-4 Classification of Effect Sizes for Relationships between Models' Constructs for the Saudi Sample

Relationship	Standardised path coefficient of the model for non-Saudi sample	Classification of effect size based on Cohen's criteria
OC → KE	0.76	Large effect
OC → OS	0.15	Small effect
IC → OS	0.58	Large effect

Table 8-5 summarises the classification of effect size based on Cohen's criteria between the Saudi and non-Saudi sample. The table displays the results for the main factors' relationships, which are (OC → KE), (OC → OS) and (IC → OS). The results indicates that the non-Saudi sample is more significant since it has two large effects results on both (OC → KE) and (IC → OS), where the Saudi sample has only one large effect for (OC → KE).

Table 8-5 Summary for Classification of Effect Size based on Cohen's Criteria between the Saudi and Non-Saudi Sample

Relationship	Classification of effect size based on Cohen's criteria	
	Saudi sample	**Non-Saudi sample**
OC → KE	Large effect	Large effect
OC → OS	Small effect	Small effect
IC → OS	Medium effect	Large effect

In order for the cross-case analysis to be performed, the relationships between the rated items in each case must be assessed against the predicted pattern shown in Figure 8-1. Table 8-6 shows the predicted patterns.

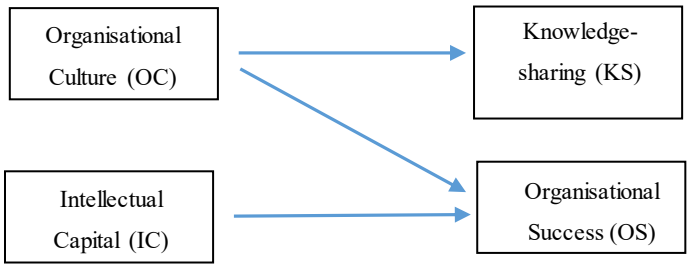


Figure 8-1 Predicted Patterns of Relationships between the Model's Constructs

Table 8-6 Predicted Patterns Results

Predicted High (H)	Pattern1
Predicted Medium (M)	Pattern 2
Predicted Low (L)	Pattern3

A qualitative rating for each variable along with a systematic assessment of predicted patterns is determined for each case and shown in Table 8-7. The results of each case are pre-arranged accordingly to the matching-up of the case patterns against the predicted patterns (i.e. from a perfect match to a partial match).

Table 8-7 Cross-case Analysis Results

Case	Size	OC	KS	IC	OS	Matching results
D	Large	High	High	High	High	Perfect match to Predicted Pattern 1
E	Medium	High	High	High	High	Perfect match to Predicted Pattern 1
F	Large	High	High	High	High	Perfect match to Predicted Pattern 1
K	Large	High	High	High	High	Perfect match to Predicted Pattern 1
L	Large	High	High	High	High	Perfect match to Predicted Pattern 1
M	Large	High	High	High	High	Perfect match to Predicted Pattern 1
A	Large	High	Medium	Medium	Medium	Perfect match to Predicted Pattern 2
J	Medium	Medium	Medium	High	Medium	Perfect match to Predicted Pattern 2
B	Medium	High	Medium	High	Medium	Good match to Predicted Pattern 1
C	Medium	High	Low	High	Medium	Good match to Predicted Pattern 1
G	Large	Medium	High	Medium	High	Good match to Predicted Pattern 1
H	Large	High	High	High	Low	Good match to Predicted Pattern 1
I	Small	High	High	Low	High	Good match to Predicted Pattern 1

The correlation patterns of the rated constructs shown in Figure 8-1 are explained in detail in Table 8-7. Firms D, E, F, K L, and M exhibited a perfect match to Predicted Pattern 1. This means that the level of OC is high which suggests there is a powerful relationship with the high level of KE and OS, along with the high level of strong relationship between IC and OS, which perfectly matches the Predicted Pattern 1. Firm A has a high level for OC but preserves a steady medium level for all other constructs (KE, OS and IC). Firm J conveys a medium level for all constructs except for IC, which is rated high. Firm B has a combination of ratings high for OC and IC but a medium rating for the KE and OS constructs, resulting in a good match to Predicted Pattern 1. However, Firm C is the only case with a mixed level of ratings where both

OC and IC are rated high, KE is rated low and OS is rated medium level of rating with a good match of Predicted Pattern 1. Firm G has a combination of ratings, with a medium for both constructs of OC and IC but a high level for KE and OS, with a good match for Predicted Pattern 1. Finally, Firms H and I have a high level for both constructs of OC and KS. However, Firm H has a high level and Firm I has a low level for the IC construct. In addition to this, Firm H has a low level and Firm I has a high level for the last construct of OS. Both firms had the same result of a good match for Predicted Pattern 1.

8.4 Discussion

The cross-case analysis outcome of the case studies of the 13 IT Saudi firms mentioned previously have reconnoitred to determine whether the model derived from the quantitative analysis can be situated qualitatively by the findings of the firms' results. Consequently, the results indicated that the correlation between constructs illustrated in the model sufficiently explains the results from the case studies. All case studies shows a good-to-perfect match with adequately predicted patterns. Six out of the 13 cases (D, E, F, K, L and M) were a perfect match to Predicted Pattern 1. Only two cases (A and J) showed a perfect match to Predicted Pattern 2. Finally, cases B, C, G, H and I resulted in a good match to Predicted Pattern 1. Sections 8.4.1 to 8.4.4 will discuss in detail the relationships between different variables and constructs according to the main factors of the original research model of the study (see Appendix G for further explanation).

8.4.1 Organisational Culture (OC) Constructs

The organisational culture constructs are based on interpersonal trust, communication and technology support. The assessment of cases A, B, C, D, E, F, H, I, K, L and M received a high ranking for these constructs, while cases J and G were ranked medium. Levels of trust must be very high in order to develop better opportunities and motivation within an organisation. However, with very few exceptions, this depends not only on the culture but also on the individuals, in that some maybe be trusted highly while others might be hardly trusted at all. Trust is also a significant factor to consider between team members to achieve successful and delegated collaboration between co-workers. In addition to this, sharing feelings and points of view in a way that does not contradict the corporate directions of the business that considers feedback is important in order to improve individual skills and motivate colleagues. Secondly, most of the interviewees reported that communication in their organisation is conducted via emails, mobiles phones, conference calls, meetings, direct communication (face to face),

Jabber, IP phones, ad hoc without any preparation and through WebEx. In addition to these, the administrative requirement portal (ARP) was used for group discussion, organising periodic sessions, workshops, brainstorming meetings, electronic workplaces, seminars and case studies to leverage the experiences of sharing knowledge with colleagues. Thirdly, all interviewees had a high standard of technology support at their organisation since all of the participants interviewed were from IT organisations. The high technology support includes considering new information and new market trends that are updated accordingly to the markets for the sake of knowledge-sharing purposes. The types of electronic storage used to access data were databases that exist through cloud storage models, for example Microsoft OneDrive. In addition to this, some organisations had an electronic system to store and retrieve data while others were equipped with artificial intelligence, where an individual can ask a machine a question and it will answer back.

8.4.2 Knowledge-sharing (KS) Constructs

The second main factor of knowledge-sharing practices has three main constructs: knowledge-sharing types, knowledge-sharing approaches and the knowledge-sharing process. Cases D, E, F, G, H, I, K, L and M received a high rating, cases A, B and J received a medium rating and case C received a low rating. Knowledge-sharing type has two sub-factors: tacit and explicit. The interviewees reported that knowledge-sharing in their organisations is prepared through weekly managerial meetings that help in developing human experiences and through IT experiences that are based on situations for problem-solving. Knowledge-sharing approaches contains both the codification and personalisation of knowledge within the organisations. The significance of documentation for knowledge transferability is considered using the case studies to give a brief scenario about issues and problems related to knowledge-sharing approaches in order to help solve them. Personalisation is a substantial tool for transferring knowledge for groups in order to help with communication in the organisation. However, it is hard to personalise because of its high expense and it all depends on the need to use for knowledge-sharing between colleagues. Thirdly, the knowledge-sharing process contains the collection and donation of knowledge within the organisation. The interviewees all reported that sharing information with colleagues is common in their organisations and was done in a casual sitting of an open discussion. In addition to this, employees do share information when they are asked and share knowledge from their past experiences based on projects whose execution has been completed. Other organisations consider sharing information with colleagues to be very transparent and they rely on each other's achievements; for these

companies, one member's success or failure is dependent on the entire team's success. Learning new information through the donation of knowledge is considered important within organisations so they can develop a knowledge environment with each other.

8.4.3 Intellectual Capital (IC) Constructs

The three sub-factors of the intellectual capital construct are human capital, relational capital and structural capital. Cases B, C, D, E, F, H, J, K, L and M had a high rating, cases A and G had a medium rating and case I had a low rating for the intellectual capital constructs. Investment in human resources through training, coaching, mentoring and supporting fresh graduates with a technical or business path is considered highly important within IT organisations in Saudi Arabia. Every employee has to go through a certification path for on-the-job training because the business is very dynamic and always in a non-periodic timing of rapid change of new technologies. There are always mandatory incentives such as bonus payments and scholarship programs available for if employees wants to continue their higher education, since human resources are the most significant asset of the organisation. A structured reporting system is a tool for employees to complete their daily tasks and measure their performance using the key performance indicators (KPIs) which drives revenue to the organisation. Interviewees reported the presence of these types of systems in their organisations.

Some interviewees reported that monitoring long-term relationships through building trust and holding weekly and monthly meetings with stakeholders, higher management and strategic partners, helps organisations to close deals. Others believe that monitoring long-term relationships with customers and stakeholders through large conventions to keep them up to date with the latest products and services is important. Others suggested that implementing a rebate program for strategic partners with the latest technology and providing training for both technical and business level employees are highly significant for the organisation.

8.4.4 Organisational Success (OS) Constructs

Organisational success is the final factor in the research model and the most significant outcome of the study. It contains two main constructs: operational and financial performance. The organisation's success is measured by evaluating whether they have achieved the revenue KPIs: time, value, profit, customer satisfaction, achieving deadlines recurring clients, maintaining employees (no turnover), not having problems and obstacles and having a well-

developed organisational culture. In addition to this, expanding operations every year, using the account manager and business development strategically and extending projects outside existing accounts will help maintain organisations' performance. Moreover, sustaining an extremely well-structured business process including all essential operations as part of the organisation will also help stabilise the operational performance of firms. If the company meets its annual financial goal and has a growing market share, it is satisfactory for the shareholder and an indicator of positive financial performance. Other measures of positive financial performance include profitability, growth, increasing the value per share in a year, achieving expected targets and maintaining a low growth every quarter to make it very steady instead of having a high growth from time to time.

8.5 Thematic Analysis

Data analysis is a dominant to reliable qualitative research method that is often used to understand, describe and interpret experiences and perceptions as a key meaning in particular circumstances and contexts (Braun and Clarke's, 2006). Thematic analysis is defined as the process of classifying patterns or themes within qualitative data. It is more of a method than a methodology (Braun and Clarke's, 2006; Clarke & Braun, 2013) as it is not tied to a particular epistemological or theoretical perspective. This means it is a flexible method, which is a considerable advantage for a given diversity of results.

The main objective of thematic analysis is to identify themes, i.e. patterns in the data that are significant or stimulating, in order to use those themes to address the research questions. It is a more simple way of summarising the data, particularly for that collected from the open questions from the survey questionnaire shown in Appendix A. Braun and Clarke (2006) distinguish between two levels of themes: semantic and latent. Semantic themes are the explicit or surface meaning of data and are appropriate when the analyst is not looking for anything beyond what a participant has said or what has been written which is captured in this study. The latent level looks beyond what has been said and needs to be identified and examined in order to trigger ideas and assumptions in which the theory is shaping or informing the semantic content of the data.

8.5.1 The Survey Questionnaire Open Questions

The data used in this section is extracted from the three open questions that were included in the survey questionnaires (see Appendix A). The open questions were asked at all 500

participants of the survey questionnaire in 37 IT firms in Saudi Arabia. Each participant had 10 minutes to fill out the open questions while completing the survey questionnaire. Braun and Clarke (2006) differentiate between a top-down and theoretical thematic analysis, which is determined by the specific research questions, and a bottom-up or inductive analysis, which is focused by the data itself. This study implemented more of a top-down approach rather than a bottom-up. The three open questions are provided for each sub-section of the survey questionnaire.

8.5.2 Extracting from the Open Questions

The Extract: The results are derived from the survey questionnaire open questions answered by participants during the data collection phase. The answerers to the open questions of the survey are summarised in detail in Appendix H. The open questions (OQ) are as follows:

OQ1: What type of organisational problems within knowledge-sharing and knowledge transfer do you have?

OQ2: How are you motivated to share/transfer knowledge within your organisation?

OQ3: How do you evaluate your organisation's success in terms of operational and financial performance?

8.5.3 Implementation of the Analysis

Braun and Clarke (2006) provide a six-phase guide which is a useful framework for conducting thematic analysis for survey questionnaire open questions, particularly dealing with a lot of complex data (shown in Table 8-8).

Table 8-8 Braun and Clarke's Six-Phase Framework for Thematic Analysis

Step 1: Become familiar with the data.	**Step 4:** Review themes.
Step 2: Generate initial codes.	**Step 5:** Define themes.
Step 3: Search for themes.	**Step 6:** Write-up

8.5.3.1 Theme 1 for Open Q1

Theme 1 answers the first open question in the survey questionnaire presented in Table 8-9 to Table 8-15. The tables are subdivided into two main themes: problems and reasons for

knowledge-sharing. Each main theme has a sub-theme correlating to it depending on the participant's answers as a direct quote to the first open question.

Open Q1: What type of organisational problems within knowledge-sharing and knowledge transfer do you have?

Theme: Problems for Knowledge-sharing

Table 8-9 Theme: The Problem of Trust, Communication and Collaboration Issues

Theme: The Problem of Trust, Communication and Collaboration Issues	
Sub-theme: Interpersonal Trust and Communication Issues • Since it is a competitive environment, knowledge-sharing is not very common, as employees do not trust each other. • Employment trust. • Lack of communication and employment trust. • A) Lack of communication between colleagues. B) No platform for employees to interact with one another. C) Working individually. • Miscommunications between different departments. • The tendency and the 'trust', also issues regarding the vision and the profitability. • Insecurity. • Trust, I think we need more trust from our company. • Communication with operations is difficult. • Sometimes it requires allot of follow ups.	Sub-theme: Collaboration Issues • Collaboration, high turnover. • There is no support or collaboration between all of the departments. • Weak departmental collaboration. • People are not willing to collaborate, and people are not willing to try new technologies. • Collaboration can be better. • Need more video conferencing for collaborating remotely. • Knowledge-sharing and transfer is maintained on a friendly basis between colleagues. Organisational culture does not focus on or encourage collaboration for the sake of impact or efficiency, signalling by finger pointing at the time, following bureaucratic systems, sending emails, back and forth with no actual outcomes that work is being done is much more important than actually doing work, and status quo is everything. • Coping with continuous change.

Table 8-10 Theme: Technology Support Problems

<table>
<tr><th colspan="2">Theme: Technology Support Problems</th></tr>
<tr><td>Sub-theme: Technical Problems
Administration, standardisation of updating maintenance (governance).
Not encouraged or supported by management, no available technology tools for collaboration and sharing knowledge.
Someone to be dedicated to update and monitor latest technology.</td><td rowspan="2">Sub-theme: Storage Problems
We do not have a central repository for storing knowledge. Information is scattered across multiple systems.
As a consultant, we have little or no access to any knowledge-sharing tools and repositories.
The problem is no documentation is gained during working hours.
No documentation, knowledge-sharing through verbal communication.
Information capture and categorising as well as creation before applying it in a repository.
Documentation, building knowledge-sharing portal.</td></tr>
<tr><td>Sub-theme: Resources and Tools Issues
Scattered success of information.
Scattered sources, the need for consolidation.
Lack of availability in one place and not easy to access, no clear map for employee's training and knowledge.
Lack of tools (social collaboration tools), lack of investment in training, leadership engagement.
Finding the right source.
If the information is not available, it takes a long time to obtain the negative information.
Less resources.
Reaching to the right resource.
The main problem is that not all the staff are using the provided tools to share knowledge. Only a few members of my organisation are using the tools.
Multiple tools are used within each division, making it hard to follow up or track data. In addition, some information is shared with the wrong person in some cases. In addition, I sometime notice that people share information via What's App groups! Which is not secure at all but they do it because it is easier and reliable.</td></tr>
</table>

Table 8-11 Theme: Transparency, Personal Issues, and Attitude Problems

Theme: Transparency, Personal Issues, and Attitude Problems	
Sub-theme: Transparency of Sharing Knowledge • Lack of enthusiasm from others, and the need of dedication from teams to hunt and share knowledge. • Lack of understanding in what is being shared, the purpose of sharing the knowledge, and the interest among others regarding the information being shared. • Some resources try to keep the knowledge they have for themselves. They feel threatened if others have the same level of knowledge in some areas of expertise. • Applying the knowledge received as recipients, challenges employees face to share their knowledge and feeling competitive. • Required more team builders for the employees. • Forgetting to share or lowering its importance. • I do not have information in the proper time, I need to ask about policies if they are changed or updated, I receive the information after I am facing issues related to and always when we ask to improve our financial situations, we are rejected due to the poor budget. • There is no knowledge transfer process. • There is no knowledge-sharing structure. • Not being on the same boat in which we must. • Small groups should be conducted to share knowledge.	Sub-theme: Personal Issues and Attitude • Some employees have bad attitude to share knowledge, however so we do share without a checklist or approval. • Just a few individuals mentality. • There is no career improvement plan available for employees. • Different priorities for each individual can lead to bad knowledge-sharing. • Encouraging problems to share and implement it in a clear procedure/system or program, and clear key performance indicator (KPI). • Some of the learning context is paid and is locked for others use. • There are no written procedures, all are personal efforts. • Individual perceptions, personal control. • Insecurity of losing their job if knowledge is shared, knowledge-sharing process/documents preparations, training etc. requires good amount of time. • In some cases, the team feel in secure, sharing knowledge with time constraints where there is not enough time to share details. • Personal issues. • Sometime there is a lack of knowledge where employees do not have a direct way to share knowledge. • No, it depends on the knowledge being shared and transferred and there is no tool for experience (cumulative).

• Some people still have a sort of resistance to sharing knowledge willingly and proactively. • Lack of transparency of information between management and co-workers.	• Personal interference and groups during projects. • Turf mentality, lack of a reward/motivational structure. • The mentality across the organisation.

Table 8-12 Theme: Job Security and Reward System

Theme: Job Security and Reward System	
Sub-theme: Job Security	Sub-theme: Reward System
• Conflict of benefits. • 1. Lack of knowledge 2. The perception of having knowledge where people do not want to share the knowledge because they believe that they will lose a competitive edge over others. • Most often, people tend to restrict knowledge-sharing due to job instability and this causes damage while taking over and enhancing the system also to support it. • Some of the non-Saudi staff do not share knowledge because they think we will replace them in their positions with Saudis. • The different cultures between Saudi people and the non-Saudis. • Cultural norms of a large group in the company is slowing down knowledge-sharing out of fear of job security.	• There is no clear compensation on this within the organisation. • Most individuals lack interest in enhancing their knowledge, which I consider a major barrier to knowledge-sharing and transfer. One of the reasons for this lack of interest can be due to lack of a reward incentive system. • Different aspects of people, currently, we just started a new initiative which is concentrating on knowledge-sharing with rewards to motivate all members, so this initiative will resolve this problem. • Some of the learning content is paid and is chosen for use. • Turf mentality, lacking reward/motivational structure.

Table 8-13 Theme: Managerial Direction and Departments Issues

Theme: Managerial Direction and Departments Issues	
Sub-theme: Managerial Direction	Sub-theme: Departmental Issues
• As my company has a manpower with different set of skills needed in each department, as an organisation there is no such set of employee's who club into one category where knowledge-sharing exists. • No direction from management to do so. • The chain of authority is too long, which causes misunderstanding when it comes to reporting and knowledge-sharing. • No full management support. • Change management and culture change is the biggest obstacle in such cases. • Sometimes knowledge transfer between high levels is not something considerable. • On boarding, weak knowledge transfer, ongoing between departments, weak knowledge at different focus, on retirement, fast and weak hand over, over all lack of mentors for multi-tasking. • Lack of training and workshops. • We need more training and meetings related to new technologies.	• Resistance to sharing knowledge. • Problems of sharing between departments. • Large companies are complex so it is difficult to share all the knowledge available. • Every department keeps its data private to avoid mistakes being exposed and personal benefits which guarantee keeping jobs. • The different divisions within the organisation can act sometimes in silence, which can be an obstacle in sharing knowledge; the discipline of employees to use the tools can be the reason preventing the knowledge-sharing. • There are many departments and all of them have different targets. There is a lack of communication between departments especially when we open new stores, marketing, commercial, supply chain, operations, and new stores. Dates of the stores opening are not updated and shared properly between key personal • The extent of knowledge-sharing between employees from different functions needs to be improved.

Table 8-14 Theme: Availability of Time and Language Barrier

Theme: Availability of Time and Language Barrier	
Sub-theme: Availability of Time	Sub-theme: Language Barrier
• Not a lot of people are willing to or have free time to share their knowledge. • Being busy with many tasks. • Little time to meet. • No time. • Time allocation for knowledge-sharing sessions. • Motivation of time. • The time is limited. • Amount of time available for employees. • Too much information and a small amount of time to share. • Security versioning, time management and responsibilities	• Not everyone's first language is English, so many individuals get lost in translation. • Communication skills like language. • Retention of data and information from past projects with individuals is poor (machines are lost, stolen, or formatted after departure), some language barriers, as many colleagues are not proficient in either Arabic or English. • The largest problem from my perspective is language, the company is originally German and the head quarter is in Germany so most knowledge is stored one way or another in German. • As the organisation is built on Chinese culture, sometimes I found language barrier, translation issues, especially the technical part are difficult.

Theme: Reasons for Knowledge-sharing

Table 8-15 Theme: Communication, Resources, Tools and Collaboration

<table>
<tr><th colspan="2">Theme: Communication, Resources, Tools and Collaboration</th></tr>
<tr><td rowspan="2">Sub-theme: Communication
Through discussions.
In my role, I don't have any, but I've seen sales representatives who have revenue quotes and sales compensation package. They sometime seem to be reluctant in sharing knowledge about their revenue accounts.
Some employees feel bad about sharing their problems and the company giving them their full support.
High internal competitiveness because of company structure across different lines of business.
Knowledge-sharing from my perspective is making information accessible and available for anyone to learn. There are two aspects for this: 1. Good platform 2. And method delivery (reports, care studies, etc.).
Nothing, all my team members are sharing knowledge.
No issues, all staff are sharing the knowledge and experiences they have.
Up to date information.
Sharing business information into that importance of implementation plan.
Culture.
In content of progress, for sharing ideas I am satisfied with knowledge-sharing is somewhat limited to an extent of work relevant only.
We do not have any issues or challenges.</td><td>Sub-theme: Resources and Tools
There are no problems and the organisation provides the relevant tools.
Knowledge-sharing is engaged and tools are made available, the only challenge is having individuals make use of these tools.
Tools to update knowledge-sharing content.
Sometimes the connectivity to remote desktops, declarations (make it slower) for knowledge-sharing and deployment.
There is a system to share the documentation in the company.
Online database and surveys.
Change management with new program implementation and software.</td></tr>
<tr><td>Sub-theme: Collaboration
The classification of employees.
Staff motivation to share and implement new ideas.
Fragmented technology landscape for collaboration tools.
Being a small company, we are pretty open and collaborative.
Willingness to share, personal and organisational motivation to share.
Some staff are willing to share knowledge or propose innovative solutions, few can "think out of the box".
None, we do not have any problems, we have a teamwork website to share the knowledge and transfer it between teams.</td></tr>
</table>

• Knowledge-sharing within the team will improve the team work	• There is no problem at all, we are aware of the working sales and this will make a positive part. • Very motivated to share knowledge. • There is no problem in knowledge-sharing in this company. • I do not think we have this kind of issue. • As we are a private company, we do not have any issues. • Nothing specific, we use sincerity to share and access information. • There are no problems. • Scenario planning prior to defining business requirements with the organisation. • Regular sessions for increasing knowledge that is missing.

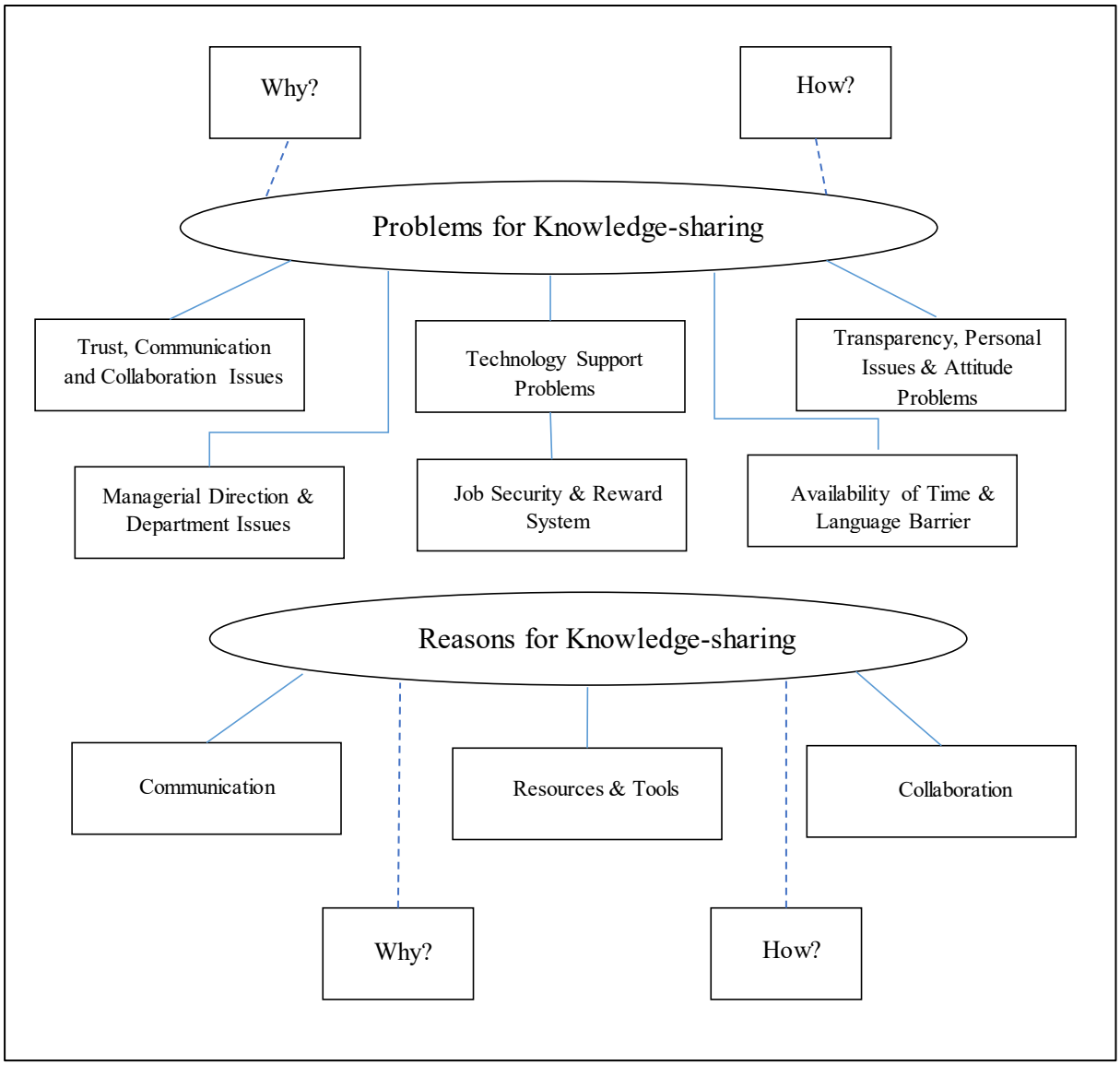


Figure 8-2 Thematic Map 1

8.5.3.2 Theme 2 for Open Q2

Theme 2 answers the second open question in the survey questionnaire. The participants' responses are presented in Tables 8-16 to 8-20. The tables are subdivided into two main themes: reasons for not being motivated to share/transfer knowledge and motivations for knowledge-sharing/transfer. Each main theme has a sub-theme correlating to it depending on the participant's answers to the second open question.

Open Q2: How are you motivated to share/transfer knowledge within your organisation?

Theme: Reasons for Not Being Motivated to Knowledge Share/Transfer

Table 8-16 Theme: Reasons for Not Being Motivated to Knowledge Share/Transfer

Sub-theme: No Motivation for Knowledge-sharing/Transfer
• Personally, I feel there is a huge gap in motivation for knowledge-sharing. • I work on my own with no support. • When there is value in what I am sharing. • When colleagues chase interest with the support from the manager. • No, because there is no clear confrontation for knowledge to share. • I do not get training. • Some by force, some are willing to share on their own terms. • No problems with the organisation it is just a behavioural problem. • Because we are one, team and need to be analysed and need to have a good internal communication to deliver the same message to the customers. • Languages and culture differences, communication with management that do not understand our methods and regulations. • Not in all departments, some departments have good knowledge-sharing others do not. • Information sometimes is hard to find, too many sources of data. • I am motivated to do this with the team during our review meetings, yet not satisfied with the level of knowledge-sharing as it could still be improved. • Career growth, building my personal brand. • Only on personal basis between colleagues and work friends, sharing and transferring knowledge is not acknowledged, rewards, encouragement by the company. • Pure self-initiative and handover to the main task. • There is no clear motivator, the team spirit and the will to share. • It depends on the project and people.

Theme: Motivation for Knowledge-sharing/Transfer

Table 8-17 Theme: Motivation for Sharing/Transferring Knowledge

Theme: Main Motivations for Sharing/Transferring Knowledge
Sub-theme: Managerial and Employee Motivation • Should start from top management, with monthly meetings for all employees. • I like to share knowledge with my colleagues and if I gain new knowledge, I get motivated to transfer to others in my organisation. In addition, if I learned a new course I would give them results of what I have learned. • I share my experience in meetings with colleagues in both formal and informal meetings and share how I found the idea and the result.

- I am always motivated to share knowledge and what I have learned with my colleagues within the organisation to work in harmony with them.
- The motivation comes from knowing that my knowledge will help others, it is considered as a favour, and others would help me in the future.
- Our work spirit.
- Personal and company objectives.
- The motivation through self-esteem and recognition.
- Highly motivated since it might add some value to one of my co-workers.
- Very motivated to do so by 1. Sharing materials 2. Presentation sessions.
- Making a difference, and moral.
- I am motivated to inspire and use my experiences/ knowledge to lead the team for a successful customer engagement.
- Self-motivated to show experience and knowledge-sharing information, knowledge and experience is empowering and enriching to both the source and audience.
- I am reasonably motivated to share knowledge. I believe 30 minutes of sharing knowledge based on experience is equivalent to many lessons of learning things.
- Very motivated if I have the chance.
- Highly motivated. I do believe in the power of sharing and in building trust and conversation within the organisation.
- We have a friendly environment.
- All employees of our organisation are very open-minded and have a positive nature towards everything.
- I am motivated to share knowledge when people collaborate with one another.
- By self-motivation to create positive relationships with colleagues.
- By knowing the benefit for the department and the organisation.
- The motivation comes primarily from the objective to complete a given task with coordination from other colleagues.
- 1. Influence 2. Exposure 3. Coaching responsibilities.
- My personal desire is to help others.
- A) Peer application. B) Ideas recorded through external forum C) Ideas recognised through successful proof of concept.
- Sharing knowledge reflects positively onto my experience and learning as well as the organisational community.
- The principles that I follow are considered motivational for knowledge-sharing.
- By seeing the result of knowledge transfer.
- All are motivated and those who share the knowledge in the company make a positive impact.
- I do not hesitate to share my knowledge and work experience with my organisation.
- I share all my experiences with my colleagues.
- When my colleagues open the same discussion.
- In order to be welcomed by others to get knowledge/info from them, I believe it is important for me to share what I know, and is generally a norm inside the company.

- Through my experience and from learning and sharing from each other's new cases and incidents.
- Sharing scores, levels, support promoting through case sharing, and knowledge transfer.
- Very welcome to participate to share or transfer my knowledge.
- Share with members any new knowledge learned.
- First managers and team leaders should earn the trust and respect of their employees, I share important ideas and problems with my team and I want them to feel valued.
- Enriching the team with knowledge exchange, give back and ideas.
- I'm usually motivated to see others improve, however the focus on the target make this difficult sometime and it consumes more time to transfer knowledge separately to each colleague.
- By doing my work and making suggestions to others.
- By sharing my new knowledge.
- By seeing the effect and some results out of it.
- I do not have any problem with sharing my knowledge, I think sharing knowledge, and experience is important to accelerate the work process.
- Success comes when knowledge is shared using best practice. It is important to change behaviours and to reach desired out comes.
- Yes, it is good for the organisation to share knowledge.
- I am always open to share my knowledge of work experience with any of my colleagues or within the organisation
- It is part of the job to do knowledge-sharing to active the derived results and to delegate tasks among the team.
- I am very motivated and do not hesitate to share any information that I know with others.
- I share techniques on all of my successful projects and learn from mistakes and improve work process
- Teamwork, growth, promotion, opportunities to grow that encourage people to prepare next in command to take over by knowledge-sharing.
- I mostly do self-motivation in sharing knowledge to improve my work experience and have rehearsals and practice.
- Whenever there is, a project or if I am asked.
- Usually by sharing results, thus explaining/sharing have to achieve them.
- I am open-minded and should be to share knowledge with my line manager and team workers and learn the experience and knowledge that they have to value more.
- No specific motivations are used its just personal motives.
- Very motivated through proper planning and a clear process.
- 1. Honest 2.Helpful 3.Good communication.
- I love sharing knowledge.
- I think it is something I love doing and passionate about.

• As my job role is to increase growth of our company/business it motivates me to share knowledge with my team because the more I transfer the knowledge the more my team can make the customers happy which will increase the business profits. • When the need arises or when the opportunity is highlighted. When exciting information is received that can be of benefit to all. • Any successful project, being big or small has one thing at its core effective collaboration, and you can achieve it with knowledge-sharing and I love sharing knowledge. • I am ready for any knowledge transfer.

Table 8-18 Theme: Tools and Reward Systems to Motivate Knowledge-sharing/Transfer

Theme: Tools and Reward Systems to Motivate Knowledge-sharing/Transfer	
Sub-theme: Tools • Live session, Weber, email, what's app groups, portals. • Optional online sessions, enforced sessions. • By email, multimedia, and lectures. • Verbal (moral motivation). • Company plan. • Verbal. • Communication motivates speed. • Acknowledgement, recognition or accreditation. • I believe in accumulating the organisation's knowledge of experience, so I am very motivated about it. • Employees are requested to update the related documentation to a special outline tool, which can be accessed by their colleagues. • Direct assignment or volunteering in quarterly web-conferencing dedicated for team sync-up. • Using internal portals. • Excellent communication with my line manager.	Sub-theme: Reward System • By awards and special meetings. • Reward of management and corporate system. • Motivation comes from sharing knowledge with each other based on a reward system (financially, (KPI) for the employees, promotions). • Tie it to the annual evaluation. • Rewards (cash, trophies, recognition and leadership). • There are special digital awards of badges as well as mentoring seven coaching is a carrier progress requirement. • My organisation just started a new initiative for sharing knowledge, by this step any employee who has a knowledge can be shared, he will gain points and rewards to all of his missions. • To be recognized as a great team member, feel the satisfaction by helping others, get promoted and recognized by your manager. • I have a KPI that is part of my success metrics, which includes the number of thought leadership items that I develop on a yearly basis. The
Sub-theme: Meetings and Sessions for Knowledge-sharing	

• By arranging knowledge transfer sessions with colleagues. • There should be mandatory sessions scheduled precisely to share the experience. • We have a fun group to transfer our ideas and knowledge. • Regular meetings for knowledge-sharing. • Frequent gatherings outside the workplace, and short meetings. • Appreciation, teamwork, regular sessions, knowledge-sharing. • Meeting with the team to review and share experiences and knowledge. • Very motivated and we have regular sessions within the team to share best practices. • Through presentations or reports during meetings.	sharing in our department of this item is accumulated towards progression of the KPI. • By including knowledge-sharing in our yearly goals, which affects our yearly salary increase if it is not in my goals sheet, I will not have information as the value of the employees is weighted by his/her knowledge and experience. • Promoting the knowledge-sharing habit, assigning this as a knowledge practice, reward and recognition plan.

Table 8-19 Theme: Training, Encouragement and Feedback

Theme: Training, Encouragement and Feedback	
Sub Theme: Training	Sub Theme: Encouragement and Feedback
• On the job training. • Knowledge-sharing is an art, it is not a stumbling block to growing personally, and instead it helps in gaining knowledge. I have personally trained people with the knowledge that I have gained over the years and that has helped both mutually. • Trainings, lesson learned after projects. • Once you get new training on the latest technology, sharing will increase in caring to get more knowledge. • With our good work experience and better team building a training program.	• Through positive feedback. • Linking information between employees. • We are encouraged to share and transfer our knowledge. • Yes, it is a good organisation for knowledge-sharing. • By schedule to get any additional knowledge which is presented to share in a broader way between employees. • Yes, and I encourage others to do it as well. • Part of my measurable performance metrics is to access collaboration and

• Through workshops, training and seminars forums of meetings etc. • By group discussion, training and presentations. • Arrange training, learned lessons and sessions after projects.	knowledge-sharing getting lesson learned across my metrics.

Table 8-20 Theme: Environmental and Cultural Motivation for Decision Making and Problem Solving

Theme: Environmental Motivation for Decision Making and Problem Solving	
Sub-theme: Environmental and Cultural Motivation	Sub-theme: Decision-Making and Problem-Solving
• Corporate keep motivating and encouraging knowledge-sharing. • Company is very dynamic, nobody is perfect because policies, practice very frequently updated. We have weekly team meetings to discuss changes, and benefit from other's experience. • The environment in my organisation facilitates and welcomes knowledge transferring and expertise-sharing. • We have to be one team with full power to get success. • Hence, it is an IT oriented rather than the dynamics of industry. Changes are quick, which implies a culture of knowledge-sharing. • The metrics structure of the organisation motivates employees by design to share information. • If the environment culture has a sharing knowledge culture. • Contribution to others is one of the five elements of culture. • It is highly likely for colleagues to share information in an interdependent environment. • I would like to describe this as a personal behaviour rather than a corporate culture.	• To solve with sharing issues/problems. • Sharing and transferring knowledge helps a lot in team expertise, level enhancement as well as in the delegation process. • Very motivated to share and transfer the knowledge, it helps me and my co-workers to solve problems fast.

• If the environment is helpful for sharing.	

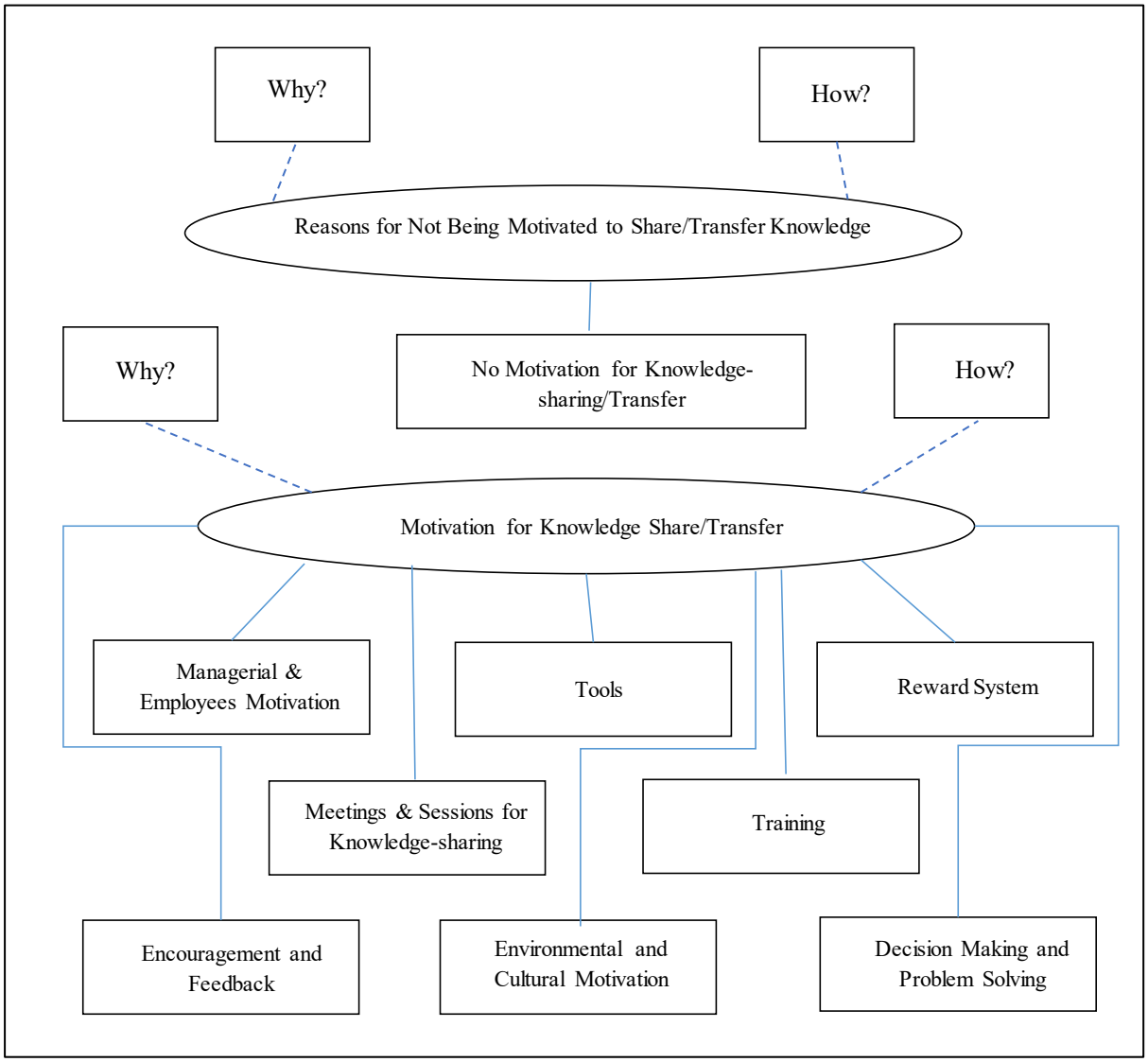


Figure 8-3 Thematic Map 2

8.5.3.3 Theme 3 for Open Q3

Theme 3 answers the third open question in the survey questionnaire. The responses of the participants are presented in Tables 8-21 to 8-22. The tables are subdivided into two main themes: the evaluation of organisational success (financial and operational performance) and good evaluation versus evaluation needs improvement for both financial and operational performance. Each main theme has a sub-theme correlating to it depending on the participant's answers the third open question.

Open Q3: How do you evaluate your organisation's success in terms of operational and financial performance?

Theme: Evaluation of Organisational Success Financial and Operational Performance

Table 8-21 Theme: Evaluation of Organisational Success Financial and Operational Performance

Theme: Evaluation of Organisational Success (Financial and Operational Performance)	
Sub-theme: Evaluation of Organisational Success in Relation Operational Performance • Great. The company has a strong presence in IT, mainly software products and that enables it to lead the market in the specific field. • Our organisation focuses on digital transformation expecting great success in the future, where we are helping customers all across the world to perform better in the digital industry. • We as oracle engage the right experts to ensure we get the value we expect. We provide advice on products and architecture and connect to the right people at the right time. • The organisation is focused on customer challenges and address these through our products and solutions. • The operational performance is excellent. • Operational performance: our institution is young, thus it is very much a learning institution but for a young institution, its operational performance is quite advanced. • It is one of the best organisations that I have worked for; they care about the employee's as much as they care about the customer's giving us a chance to enhance our knowledge and experience.	Sub-theme: Evaluation of Organisational Success in Relation to Financial Performance • My organisation is performing efficiently and has made a profit due to the strong ties with the customers. In addition, making a good reputation since it has a very good reference in the market. • Increase by revenue year after year, they are the leaders in applications and technology. • Making yearly targets, healthy growth in revenue, smooth restructures and transactions to new domains. • The operational structure is very successful cycle in our organisation as per financial performance we stand for all organisations. • It is very profitable company, going into the right direction. • Operation: strength, weakness, opportunity and threat (SWAT), financial: cost versus revenue. • Revenue growth, profitability, customer success, employee engagement. • My organisations is now the major IT Company worldwide and we have one of the largest parties across all competitors, our financial performance is excellent. • My company profit growth is increasing higher year after year.

• Company is growing at an efficient route and this has maintained the good will compared to our key competitors. Progress is steady, adaptive of the carrying rules, and very destructive in maintaining the quality of services and products. • 1. Hardworking 2.Value of customers.	• Financial viability: profitability, customer satisfaction: performance on customer, employee satisfaction: satisfaction survey (performance on employees' satisfaction survey)

Theme: Good Evaluation versus Evaluation Needs Improvement in Relation to both Financial and Operational Performance

Table 8-22 Theme: Good Evaluation versus Evaluation Needs Improvement in relation to both Financial and Operational Performance

Theme: Good Evaluation versus Evaluation Needs Improvement in Relation to both Financial and Operational Performance	
Sub-theme: Good Evaluation of Organisational Success from Financial and Operational Performance	Sub-theme: Evaluation of Organisational Success Needs Improvement From Financial and Operational Performance
• As it is a global organisation, it is always running to achieve the goals in terms of operations and financials. The performance of achieving those goals is high and always motivated by the upper management. • One of the best companies in terms of performance in the century and the region. • During the current situation and financial situation of this country, we can see that our organisation is making an effort to control the financial and operational performance. Although we are suffering to manage the financial situation by doing all of the possibilities to reduce the cost, as comparing with our competitors our organisation so far succeeded to put us on the right track.	• Operational wise we are very inefficient and there is a lot of room to improve. Financial wise it is not applicable because we are in the public sector. • Slow/weak operational performance over the organisational level. • Since we are a start-up organisation we are at a medium stage of operational and financial performance. • Operationally: need more consideration on speeding and meetings (KPI's). Financially: the market is very competitive with fair performance but need more investment on improving crossing levels. • We are going through transformation and restructuring phases mostly to enhance the financial performance where we struggle. • I think at the current market situation our company operational and

• 1. We have a good and best business progress 2. We have a good earnings and business proposes. • One of the top KSA organisations where its operational capability and its financial aspects are a non-profit. • Some operational problems could not be faced very often due to team's sizes but our company is financially stable and growing. • Proper planning of large team groups leads to operational success. When there is a proper goal, the financial goal would be also affective. • Our key of success is our support and quality of service, due to this we keep growing every year. • Operational is extremely good, financial we have a constant growth year after year. • It is very important role and contribution for both operational and financial performance for the organisation. • The financial is very high. Last year we have closed the year with 12% over achieved and the same goes for the operational performance. • I evaluate the company success by creativity and alternatives operational environment that can support financial growth. • It is better than any key competitors are and operational success is good, financial performance is excellent. • Operational performance is very good as well as financial. • Strong one of the largest 20 companies in the Middle East. • I would evaluate my company as very good, considering the transformation we went through. • We are in great position financially and about operational we have done	financial performance is getting better. • The financial and operational performance of my organisation are fairly good but due to the present financial crisis in the region, organisation and many other companies need to cut down on the IT expenses. • Operational: need to build a strong team, promote employees to workshops, and improve productivity efficiently for employees. Financial: producing overheads like travel expenses, more funding to the business. • Monumental inefficiencies and wasted resources and potential, growing cash flows problems having bigger debts, no solid action to solve it, just signals and impulsive rules, resting on status quo, catastrophic failure went up against senior competition. • Our organisation can perform better than our current result if they change some aspects of business dealings. • Bottom line can be improved a lot by reducing roaming charges for mobiles. • Internal process are killing the business, as sales we struggle internally more than we do with prospects/partners/or customers. • Team work and continues improvement in process and execution. • Our company lost growth rapidly in the past but has slowed down at the moment due to many factors, e.g. regional economic slowdown, change of business strategies etc. • Our company is in financial trouble because of the economy. • Operationally the company is struggling

successfully so many projects around Saudi Arabia. • Considering financial statement growth in both operational and financial performance is above average. • Customer satisfaction and employee satisfaction are both indicators of operational performance. We use Net Promoter Score (NPS) to measure and evaluate both performances. Meeting annual financials targets of market share growth are indicators of financials performance that lead to shareholders' satisfaction. • The company is very stable in terms of operations and financial performance.	• My organisation has a lack of operational experience and financially is performing poorly. • It is very poor and needs more development. • Excellent financial performance, operational performance need enhancement. • Very good operational goals and progress but weak progress financially so far.

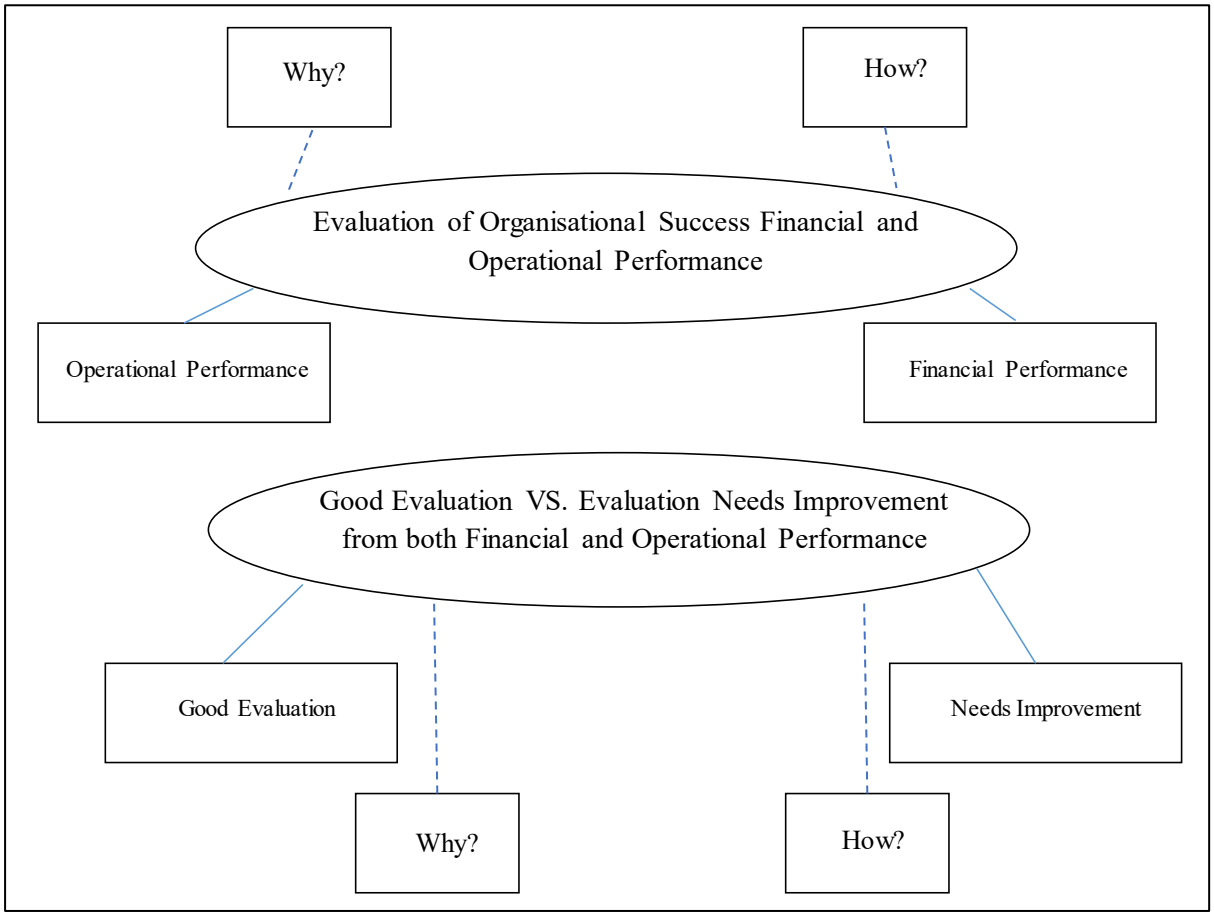


Figure 8-4 Thematic Map 3

8.6 Significance and Contribution

Two types of qualitative analysis have been employed to validate this research's model: within-case analysis and cross-case analysis. First, the within-case analysis show a great variety of different variable ratings. A high rating of organisational culture for factors obtained in terms of interpersonal trust, sharing feelings and points of view with colleagues using a variety of tools for communication with high technology support and electronic storage for knowledge-sharing purposes. Then, the knowledge environment implies a mixed rating for all of the four factors of knowledge-sharing type, knowledge-sharing approaches, knowledge-sharing process and intellectual capital. First, knowledge-sharing type has a high rank for sharing explicit knowledge with employees through discussions within the organisation. However, tacit knowledge has a high to medium rank when it comes to sharing knowledge though human experiences; which demonstrates limited awareness of tacit knowledge-sharing. Second, knowledge-sharing approaches has a high rank for codification knowledge, where documentation is significant for knowledge transferability. However, personalisation has a high to medium rank when it comes to personalising tools that help in transferring knowledge

between co-workers. Third, knowledge-sharing process has a high ranking when it comes to collecting knowledge to share with colleagues and donating knowledge to learn new information. Fourth, intellectual capital has a high ranking for human capital by investing in human resources, relational capital by implementing tools that help employees complete their daily tasks and, finally, structural capital by monitoring the organisation's long-term relationships with customers, stakeholders and strategic partners. Therefore, the outcome of organisational success has a high rank for both operational and financial performance, which are the measures used in this research to evaluate the level of organisational success.

The cross-case analysis indicated that the correlation between constructs illustrated in the model sufficiently explains the results from the case studies. All case studies shows a good-to-perfect match with adequately predicted patterns. Therefore, Cohen's criteria shows the results of the final models for both the Saudi and non-Saudi samples' relationships between their constructs. Table 8-3 classifies the effect sizes for the relationships between the model constructs for the Saudi sample: (OC → KE) shows a large effect, (OC → OS) shows a small effect and (IC → OS) shows a medium effect based on their standardised path coefficients. Table 8-4 explains the effect sizes for relationship between the model constructs for the non-Saudi sample (OC → KE) which shows a large effect, a small effect for (OC → OS) and a large effect for (IC → OS) based on their standardised path coefficients. The result of the cross-case analysis shows that both Saudis and non-Saudis have a large effect for (OC → KE) and a small effect size for (OC → OS). However, for the Saudi sample, (IC → OS) has a medium effect size while it has a large effect size for the non-Saudi sample. This confirms that the SEM models for the non-Saudis shown in Figure 7-5 in Chapter 7 is more significant than the Saudi SEM models shown in Figure 7-4. The cross-case analysis proves that according to Cohen's criteria, the non-Saudi sample has a larger effect based on their standard path coefficient (Table 8-3) than the Saudi sample, which has a large to medium effect size also based on their standard path coefficient (Table 8-4).

Thirdly, thematic analysis was conducted of the three open questions in the survey questionnaire. After evaluating the answers provided by participants, each question is divided into a main theme and sub-theme. The first theme discusses the main problems for knowledge-sharing, which are trust, communication, collaboration issues, technology support problems, transparency, personal issues, attitude problems, managerial direction and department issues, job security, reward system, availability of time and language barrier. The reasons for knowledge-sharing were communication, resources, tools and collaboration motives.

The second theme explored the main reasons for not being motivated to share/transfer knowledge. The main motivations for knowledge-sharing/transfer were managerial and employee motivations, presence of tools for sharing/transferring knowledge, reward systems, meetings and sessions for knowledge-sharing/transfer, training, encouragement and feedback, environmental and cultural motivations and, finally, decision-making and problem-solving, which help individuals to share knowledge.

The third theme evaluated the main reasons for organisational success in terms of financial and operational performance. It also compared good evaluation and improvement needed in terms of financial and operational performance of organisations.

8.7 Chapter Summary

In this chapter, a confirmation study evaluated whether the research model was consequential, interpreting data from the quantitative analysis phase. The qualitative analyses discussed above utilised an explanatory case study research approach that tested the relationships between the hypotheses' variables and their propositions. This method of analysis used 13 interviews with executives and managers in Saudi Arabia's IT firms. The interviews were conducted physically face-to-face in the participants' offices after they signed the consent form which was developed by the University of Technology Sydney's Human Research Ethics Committee (HREC). Analysing the collected qualitative data involved two different stages: within-case analysis and cross-case analysis. First, the rating level summary for the factors and constructs of the model were discussed clearly in the within-case analysis. Secondly, a match of predicted patterns between the relationships between the factors and constructs were then inspected by using a pattern-matching technique, after which the cross-case analysis associated the rated factors and evaluated them again by assessing them against the predicted patterns. The results of this analysis showed that the research model factors were validated by the 13 case studies, which found a good-to-perfect match for all cross-cases.

Finally, the thematic analysis concludes the qualitative phase by answering the three open questions in the survey questionnaire. Each open question developed a main theme and sub-theme based on the participants' answers as a direct quote from the survey questionnaire. This chapter ends the qualitative analysis phase of the thesis and the upcoming chapter, Chapter 9, contains the final discussion and conclusion of the theory for the research model of the study.

Chapter 9: Discussion and Conclusion

9.1 Objectives and Structure of the Chapter

This chapter indicates that organisational culture (OC) and knowledge-sharing (KS) are key sources of competitive advantage and are essential for long-term success of any organisation. To extend our view of the organisation knowledge environment, we have to look deep into *knowledge-sharing practices* by examining and understanding knowledge-sharing types, knowledge-sharing approaches, and knowledge-sharing processes, and the organisation *intellectual capital*, which is the sum of all knowledge used to develop the process of conducting business to gain competitive advantages. This research is to explore how do organisational culture affects knowledge sharing practices (types, approaches, and process) and on intellectual capital (human, structural and relational capital) towards organisational success (financial and operational performance).

The study sought to explore organisational culture by examining the role of interpersonal trust, communication and IT support for knowledge-sharing purposes. Interpersonal trust represents the willingness of employees to accommodate risk and vulnerability when they engage in knowledge-sharing with other employees. There is prior evidence that points towards the importance of analysing trust in knowledge environment, which attract trust as a key aspect of organisational culture for knowledge-sharing. To examine the role of communication between staff, we consider communication style and the ease of communication during knowledge exchanges between employees. Lastly, we examine the level of technology support that organisations offer to allow employees to share knowledge smoothly using organisation's information systems. The three above variables constitute the measurement model for organisational culture applied in this study. With the OC measurement model, we examined the effects of OC on the organisation's knowledge sharing environment.

The organisation's knowledge sharing environment includes the organisation's knowledge sharing practices, i.e., the knowledge flows in the organisation, and the organisation's intellectual capital, i.e., the organisation's stock of knowledge. This research examines the extent to which knowledge-sharing types, knowledge-sharing approaches and knowledge-sharing process affect's intellectual capital. The findings offer a broader view of the organisation's knowledge environment and expresses the effects of multiple knowledge sharing practices on intellectual capital. This research teases out the effects of knowledge sharing practices on each of the three common dimensions of intellectual capital, i.e., human capital, relational capital, and structural capital.

The main objective of this chapter is to present the major results and findings of this research study. Section 9.2 revisits the main research aims, research model, hypothesis and research questions. Section 9.3 discusses the study's findings for both the quantitative and qualitative phase assessments, then Section 9.4 explains the study's contributions. Section 9.5 outlines the contribution of this research to the existing body of knowledge, which is followed by a discussion of the implications of this work in Section 9.6. Section 9.7 identifies the limitations of the study and suggests potential recommendations, guidelines and directions for further study. Finally, Section 9.8 points out the main significance of the study and the chapter is concluded in Section 9.9.

9.2 Reassessing the Research Aims, Research Model, Hypothesis and Research Questions

Reassessing the main research aims, research model, hypothesis and research questions is a significant part of this final chapter as this will link the research questions to the results of Phase A (the quantitative analysis) and Phase B (the qualitative analysis) prior to the conclusion of the study's major findings. In Chapter 1, the different aspects of this study were identified. The research background explains that the prime factor of any organisation is "knowledge". It is obvious that strategic knowledge management is the fundamental force for superior innovation and market performance (Cabrilo & Dahms, 2018). Therefore, the influence of organisational culture and the creation of knowledge environment factors are major factors in an organisation's success.

This study operationalises an organisation's knowledge-sharing environment by explicating the flows and stocks of knowledge, examining the stocks of knowledge by investigating the intellectual capital of the organisation. In this research, it is suggested that organisational culture shapes the flows and stocks of the knowledge of an organisation, which consequently affects its organisational success, where organisational success depends on employees' commitment and performance, which is defined by the organisational culture (Anitha & Begum 2016; Arifin 2014).

Chapter 2 reviews the literature, by highlighting the findings and recommendations of previous research studies. A growing body of evidence suggest that culture plays a vital role in the knowledge management processes in the organisation. The chapter then reviewed the existing association between culture and knowledge-sharing in order to identify the major gaps in the knowledge. Therefore, the study utilises the idea of a "knowledge environment," which contains three sub-factors of knowledge-sharing and intellectual capital. Then, the study's

looks at the relationship between the knowledge environment and organisational success performance. As a result of this, the literature review helped build a connectivity between the major factors of the research model shown in Figure 9-1, which are organisational culture, knowledge environment and, finally, organisational success. Each main factor has sub-factors that support a positive significant relationship between each other in the research model. First, organisational success mainly verifies interpersonal trust, communication and technology support for knowledge-sharing purposes. Secondly, the knowledge environment contributes to knowledge-sharing type (with two sub-factors of explicit and tacit knowledge), knowledge-sharing approaches (with two sub-factors of the codification and personalisation of knowledge), knowledge-sharing process (with two sub-factors of the collection and donation of knowledge), and intellectual capital (with three sub-factors of human, structural and relational capital). Thirdly, organisational success is measured by looking at financial and operational performance. The research model in Figure 9-1 identifies each main factor and sub-factor and their relationship to each other is the main contribution to the body of knowledge of this research.

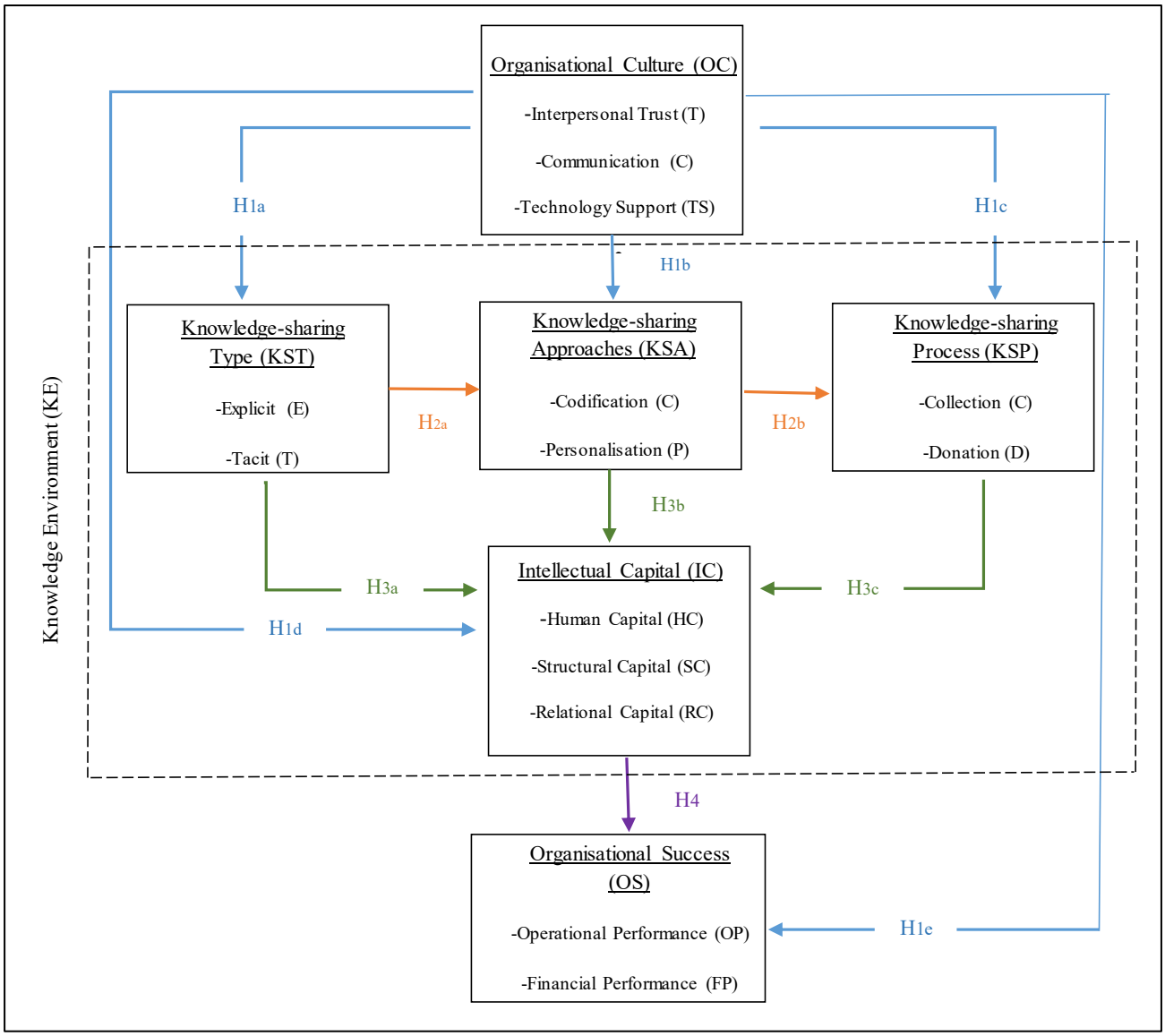


Figure 9-1 Research Model

9.3 Discussion of the Major Research Findings

The first hypothesis relationship tested organisational culture's influence on the knowledge environment in the organisational success of IT firms in Saudi Arabia. This hypothesis is subdivided into five-sub hypotheses. **H1a** tests the relationship between organisational culture and knowledge-sharing type, **H1b** tests the relationship between organisational culture and knowledge-sharing approaches, **H1c** tests the relationship between organisational culture and knowledge-sharing process, **H1d** tests the relationship between organisational culture and intellectual capital, and **H1e** tests the relationship between organisational culture and organisational success.

The second hypothesis relationship tested the influence of the main factors of knowledge-sharing – knowledge-sharing type, knowledge-sharing approaches and knowledge-sharing

process for the sake of organisational success. This hypothesis is subdivided into two hypotheses. **H2a** test the relationship between knowledge-sharing type and knowledge-sharing approaches, and the second sub-hypothesis **H2b**, tests the relationship between knowledge-sharing approaches and knowledge-sharing practices.

The third hypothesis relationship tested the relationship between the success of Saudi IT firms and knowledge-sharing type, knowledge-sharing approaches and knowledge-sharing process on the impact of intellectual capital factors: human, structural, and relational capital. This hypothesis is subdivided into three-sub hypotheses: **H3a** tests the relationship between knowledge-sharing type and intellectual capital, **H3b** tests the relationship between knowledge-sharing approach and intellectual capital, and **H3c** tests the relationship between knowledge-sharing process and intellectual capital.

The fourth hypothesis tested the final relationship between the influence of intellectual capital on the organisational success in terms of operational and financial performance. This hypothesis is only one main hypothesis, **H4**, which tests the relationship between intellectual capital factors and organisational success factors.

9.3.1 Phase A: Quantitative Study Assessment

The quantitative assessment had the following results.

9.3.1.1 Organisational Culture (OC) Factors

The organisational culture construct has 12 variables and three sub-factors (interpersonal trust, communication, and technology support) which significantly positively influence the knowledge environment process in the organisational success of IT firms in Saudi Arabia. The literature review showed that organisations may define their culture based on the mutual trust, profound communication/collaboration and IT support provided by one team or individual to another (Schein, 2004b).

There is evidence to suggest that an increase in trust positively affects performance and cooperation (Abrams et al., 2003; de Jong, Dirks & Gillespie, 2015; Kanawattanachai & Yoo, 2002; McAllister, 1995; Paul & McDaniel Jr, 2004). Exchange processes are effected through trust (Johnson & Cullen, 2002). National culture, for example like the Saudi culture, has a significant bearing on trust (Johnson & Cullen, 2002; Lu et al., 2017). According to de Jong, Dirks and Gillespie (2015), trust evocatively foretells effective collaboration, especially when

trust in group forerunners and past performances are controlled. The issue is that interdepartmental relationships and trust is of utmost importance, as it can lay the foundation of effective and productive communication and collaboration towards knowledge-sharing and organisational success. Without trust, inter-group rifts within an organisation would result in detrimental and counterproductive outcomes (Bennett & Gabriel, 1999).

Communication shapes the evolution of a social system and behavioural change (Bandura et al., 2004), regardless of whether IT or physical support occurs. Culture will influence communication styles and the interpretation of the message during communication (Mead & Jones, 2002). The richness of an organisation's communication media, approaches and/or systems are also shaped by the cultural background of the organisation, which ultimately affects knowledge-sharing (Klitmøller & Lauring, 2013). A person's orientation towards power distance, uncertainty avoidance and collectivism versus individualism will influence their preference of one communication style over the other (Mead & Jones, 2002). For instance, high power distance, high uncertainty avoidance and collectivist cultures, such as Saudi Arabia, influence people towards appreciating a one-way communication style (Mead & Jones, 2002). Moreover, effective communication depends on how one deals with uncertainty (Luque & Javidan, 2004).

The role of organisational culture not only raises the issue of trust among employees and departments, different cultures may require different technologies to support communication and sharing (Klitmøller & Lauring, 2013). The issue of technology support then becomes an important element of consideration in organisational culture. IT support, in the sense of this study, relates to the ability of organisations to develop an IT environment sufficient for facilitating its knowledge management practices and the utilisation of intellectual capital. IT support is an enabler for task organisation and innovation for improved team performance (Seeber, Waldhart & Maier, 2014).

Organisational culture, such as communication, interpersonal trust and IT support, may facilitate organisational learning, which is the practice of producing, retaining, and transmitting knowledge within an organisation (Bennett & Gabriel, 1999). Organisational learning is a continuous phenomenon through which organisations improve over time (Kaplan et al., 2014). Learning through experience enables organisations to generate knowledge which, after due processing, is transformed into information and thus develop the organisational culture (Frost, 2010).

The results of the analysis conducted in this research show there is a positive significant relationship between organisational culture factors and knowledge-sharing type, knowledge-sharing approaches, knowledge-sharing process, intellectual capital and organisational success factors. The descriptive statistical outcome proves that the level of interpersonal trust is high in organisations where most executives, managers and employees do not hesitate to share their feelings and points of views with their colleagues and where organisations tend to encourage supporting executives, managers and employees in sharing knowledge with one another mainly through meetings. In addition to this, most of the IT organisations used different tools such as email, intranet, groupware and cloud computing to facilitate knowledge-sharing and exchange experiences for the sake of knowledge-sharing purposes.

The CFA results of the STF constructs organisational culture model fit indices proved to be good and unidimensionality was established. SEM analysis was then used to compare the Saudi and non-Saudi samples for the organisational culture model. The structural model result for organisational culture for the Saudi sample (shown in Figure 7-7) illustrates that the organisational culture interposal trust factor is not supported with knowledge-sharing type, knowledge-sharing approaches, and both factors of organisational success (operational performance and financial performance). The results indicate that the Saudis had a conflict with interpersonal trust towards sharing tacit and explicit knowledge within the organisation along with codifying knowledge and the personalisation of tools for the sake of knowledge transfer. Another trust issue that Saudis faced is seeing the benefit of organisational success when it comes to the operational part of the organisation or gaining trust from a financial perspective. They consider it a confidential point of view that should not be shared between co-workers unless they are part of the department (see Table 7-3).

The non-Saudi sample (shown in Figure 7-8) illustrates that all factor variables are supported between each other and are considered strongly significant, except for the organisational culture interpersonal trust factor which is not supported with knowledge-sharing approaches. This shows that non-Saudi employees also do not support sharing both tacit and explicit knowledge within the organisation. Another unsupported factor is the organisational culture technology support with the knowledge-sharing approaches factor. This shows that both interpersonal trust and technology support do not support knowledge-sharing approaches, which is considered less significant that the other factor variables shown in Figure 7-8. Therefore, the non-Saudi sample shown in Figure 7-8 is more significant than the Saudi sample shown in Figure 7-7 for the structural model result for the organisational culture.

9.3.1.2 Knowledge Environment (KE) Factors

The knowledge environment (KE) has four main factors:

1. Knowledge-sharing types (two sub-factors: explicit and tacit);
2. Knowledge-sharing approaches (two sub-factors: codification and personalisation);
3. Knowledge-sharing process (KSP) (two sub-factors: collection and donation); and
4. Intellectual capital (three sub-factors: human capital, structural capital, and relational capital).

The main factors of the knowledge environment have significant positive relationship with each other's main factors and the 9 sub-factors, resulting in 26 variables in total. Today, many organisations have realised the significance of knowledge as a key factor and its main intangible resource. This is mainly done by identifying the source of knowledge of the organisation from the external environment. The use of knowledge come into place were the integration of external and internal knowledge help to enhance problem-solving procedures and support managers in decision-making. Through this integration, new knowledge is created in the knowledge environment.

The knowledge environment was detained by combining knowledge-sharing practices with intellectual capital. The technology through which individuals share tacit knowledge, the approach or strategy to tacit knowledge-sharing and the degree of tacitness are important considerations for organisations (Joia & Lemos, 2010; Murray & Peyrefitte, 2007; Wu & Shih, 2010). Explicit knowledge is as important as tacit knowledge. It is therefore important for organisations to create a knowledge-sharing environment that supports employees interacting with all forms of knowledge because, 'Comparing tacit and explicit types of knowledge, [as is in this study], is a way to think, not point out differences' (Smith, 2001, p.313). Explicit knowledge refers to structured and formalised instances of knowledge. It is knowledge that individuals can describe in a formal language, print or electronic media, often based on established work processes using a people-to-documents approach (Smith, 2001).

To design a sufficient knowledge-sharing environment, organisations will have to recognise two approaches for knowledge-sharing – codification and personalisation (Hansen, Nohria & Tierney, 1999), i.e. the commodity view of knowledge and the community view of knowledge respectively (McMahon, Lowe & Culley, 2004). Some studies (Dalkir, 2011; Helms, Cranefield & Reijsen, 2017; Huysman & De Wit, 2004) consider codification as the first wave of knowledge management while personalisation is the second tendency of knowledge

management. In fact, organisations should be particularly vigilant when deciding which strategy should be prioritised over the other because it is believed that knowledge management is evolving from focusing on codification rather than personalisation as a way to enable knowledge-sharing and management in the organisation (Helms, Cranefield & Reijsen, 2017). This is because codification can be quite expensive and fails to meet knowledge management goals due to infrastructure requirements and coping with technology evolution (Alavi & Leidner, 1999). Secondly, focusing entirely on technology is just managing knowledge, but when we focus more on the people, processes and culture then we can manage and enable knowledge-sharing (Dalkir, 2011). The organisational environment will largely influence the choice of a knowledge-sharing approach, according to Greiner, Böhmann and Krcmar (2007).

It is important to note that knowledge-sharing may happen voluntarily or involuntarily during interaction and communication processes among individuals whenever activities of exchanging knowledge such as skills and experiences occur among individuals (Inkpen, 1996). There are two actors involved: the contributor/donor, who is an individual that contributes knowledge to the benefit of others through a shared media; and the collector/seeker, who is the other individual that collects or receives the existing knowledge. Consequently, the organisation must define mechanisms to support two knowledge-sharing processes – knowledge donation and knowledge collection (Van Den Hooff & De Ridder, 2004). The entire knowledge-sharing process fundamentally resides on two objectives, sharing for knowledge application and sharing for knowledge development (Hendriks, 1999). When the above objectives are achieved, then knowledge contribution and collection are recognised as support pillars for innovation and creativity (Lin, 2007b).

However, one needs to understand the role of different aspects of the knowledge environment (knowledge-sharing types, approaches and processes) in order to understand and derive ways and systems for intellectual capital development and utilisation. Intellectual capital is the combination of intangible assets available with an organisation that enable it to function (Brooking, 1996). It is 'the sum of everything everybody in a company knows that gives it a competitive edge' (Stewart & Ruckdeschel, 1998, p.56) or the 'knowledge that can be converted into value' (Edvinsson & Malone, 1997, p.358). A more practical definition from a managerial perspective is provided by Chatzkel (2002, p.6), who states that it is 'the knowledge, applied experience, organisational technology, relationships, and professional skills that provide for a competitive edge in the market.' Intellectual capital will constitute things like processes, technology, employee skills and experience and information about

customers, suppliers and stakeholders that enhance the organisation's performance and competitiveness (Luthy 1998; Stewart & Ruckdeschel, 1998). Intellectual capital creates value for an organisation (Chatzkel, 2002; Sardo & Serrasqueiro, 2017) and that is why it is 'the new wealth of organisations' (Stewart & Ruckdeschel, 1998). In other words, 'intellectual capital can make a company rich' (Lu, Wang & Kweh, 2014, p.65).

The analysis conducted in this study shows that there is a positive significant relationship between knowledge environment factors (knowledge-sharing type, knowledge-sharing approaches and knowledge-sharing process) and intellectual capital factors. The descriptive statistical outcome proves that the knowledge-sharing type explicit factor for employees in IT organisations is high where they are mostly facilitated by IT systems invested for knowledge-sharing purposes. However, the tacit factor had a moderate level where employees tend to collect knowledge from others based on their experiences. The knowledge-sharing approaches for the codification factor where the value was high was for employees who tended to collect data through recording, drawings and happenings for future use. Nevertheless, the personalisation factor had a high value for employees who held routine review meetings to discuss and generate ideas where knowledge-sharing is captive. Moreover, the knowledge-sharing process collection factor had a high value for most employees who share the knowledge they know with colleagues when they acquire it. On the other hand, the donation factor had a high value for employees sharing their information with colleagues only when they are asked, which is not very certain in organisations. The intellectual capital factors had a high value for all factors. The human capital factor was high when employees in IT companies tended to hold suitable work experience, have an easily accessible information system and have stable and good relationships with their strategic partners which help them to accomplish their job successfully.

The CFA results of the STF constructs of the knowledge environment model fit indices proved to be good for the knowledge-sharing (KS) model, and unidimensionality was established. The exception was for the intellectual capital (IC) model, where the model fit indices proved to be poor but not bad and unidimensionality was still established. The SEM analysis compared the Saudi and non-Saudi samples for the knowledge environment model. In the structural model, the result for the Saudi sample shown in Figure 7-13 presents that not all factor variables are supported between each other and are considered less significant. However, the knowledge-sharing type explicit (KST_E) factor supports both human capital (IC_H) and structural capital (IC_S), while the knowledge-sharing type tacit (KST_T) factor only supports the relational

factor (IC_R). The knowledge-sharing process donation (KSP_D) factor supports both human capital (IC_H) and relational capital (IC_R). Conversely, the non-Saudi sample shown in Figure 7-14 illustrates that all factor variables are supported between one another except for knowledge-sharing type tacit (KST_T), which does not support structural capital (IC_S). Consequently, the knowledge-sharing approaches sub-factors codification (KSA_C) and personalisation (KSA_P) do not support any of the intellectual capital factors: human capital (IC_H), structural capital (IC_S) and relational capital (IC_R). The knowledge-sharing process collection (KSP_C) does not support the human capital factor (IC_H) and the knowledge-sharing process donation (KSP_D) does not support the relational capital (IC_R) factor. This result shows that the non-Saudi sample (shown in Figure 7-14) for the knowledge environment factors is more strongly significant than the Saudi sample (shown in Figure 7-13).

9.3.1.3 Organisational Success (OS) Factors

The organisational success construct has 8 variables and two sub-factors: financial performance and operational performance. Intellectual capital has a significant positive relationship with both organisational success factors. According to the literature, knowledge is a prominent resource for intellectual capital development, as intellectual capital is a resource for performance. It is therefore becoming a prominent issue of consideration when an organisation seeks to enable knowledge to help enhance organisational success.

Organisational success relates to an organisation's satisfaction with its business and strategic outcomes or the benefits that arise from its operations (Badewi, 2016; McLeod, Doolin & MacDonell, 2012). Intellectual capital, knowledge management and organisational culture are interlinked phenomenon that play a very vital role in enhancing organisational performance such as innovation, productivity and output. These three constructs are essential components of a smooth process of evolution, which continues in almost all organisations. All of these components are necessary for any organisation to the extent that a company that insufficiently addresses any of the above constructs may jeopardise its ability to achieve success.

Since knowledge is not commonly distributed within organisations, knowledge-sharing among individuals, teams and/or units is a practice that can be used by organisations to identify, capture, create and accumulate their knowledge to facilitate resource-structuring and capacity-building, both of which have been found to significantly increase firms' operational performance (Wang & Wang, 2012). The high level of expertise in knowledge-sharing helps organisations to take advantage of the existing formal knowledge and expertise in integrated

problem-solving, which can improve products and processes (Lawson et al., 2009). Lee (2001a), for example, found that once successful explicit knowledge-sharing takes place directly in outsourcing projects, firms' financial outcomes are enhanced. Carr and Kaynak (2007) suggest that information-sharing within and between organisations will help the organisation's members identify critical problems and that will lead to better product quality improvement and financial performance. Wang and Wang (2012) confirmed that explicit knowledge-sharing practices facilitated innovation and financial performance.

According to the results of analysis, there is a positive significant relationship between intellectual capital factors and organisational success factors. The descriptive statistical outcome proves that the highest mean value for the operational performance is when organisations agree that customer satisfaction is much more significant than their key competitors are. However, the highest mean value for the financial performance is when the organisation's return on investment are better than their key competitors.

The CFA results of the STF constructs of the organisational success model's fit indices proved to be good for the organisational success model, and unidimensionality was established. Furthermore, the SEM analysis compared the intellectual capital and organisational success of the Saudi and non-Saudi samples. In the structural model result for intellectual capital and organisational success for the Saudi sample, shown in Figure 7-16, all factor variables are supported between one another except for the human capital (IC_H) sub-factor, which does not support either of the organisational success sub-factors. This makes the model less significant. On the other hand, in the non-Saudi sample, shown in Figure 7-17, all factor variables are supported between one another except for the human capital (IC_H) sub-factor that does not support the organisational success sub-factor financial performance (OS_FP). As a result, the non-Saudi sample shown in Figure 7-17 for the intellectual capital and organisational success model is more strongly significant than the Saudi sample shown in Figure 7-16.

9.3.2 Phase B: Qualitative Study Assessment

In order to verify the results obtained from the qualitative analysis, a sequential qualitative validation procedure was employed. Verification would be facilitated if executives, managers and employees in selected Saudi Arabia IT firms could adequately validate the relationships in the experiential study in the actual phenomena. This was established by conducting a group of 13 case studies with IT Saudi firms in Saudi Arabia. The case studies obtained two significant results validating the empirical model. Then, a thematic analysis was conducted on the three

open questions from the survey questionnaire using direct quotes from the participant's response to the questions, which supported the qualitative analysis results.

The qualitative assessment had the following results.

9.3.2.1 A Within-Case Analysis

- The within-case analysis results show that almost all model factors representing the constructs were correlated in some way across all of the sampled firms.
- This indicates that the main factors of organisational culture, knowledge environment and organisational success were reliable in measuring the actual phenomena.

9.3.2.2 Cross-Case Analysis

- The cross-case analysis outcome of the case studies of the 13 IT Saudi firms mentioned previously have reconnoitred whether the model derived from the quantitative analysis can be situated qualitatively by the findings of the firms' results.
- The results indicated that the correlation between constructs illustrated in the model sufficiently explains the results from the case studies.
- An acceptable level of correlation of the overall finding from the cross-case analysis using the pattern-matching technique was found between the quantitative and qualitative results.
- All case studies show a good-to-perfect match with adequately predicted patterns.
- 6 out of 13 cases (Firms D, E, F, K, L and M) had a perfect match to Predicted Pattern 1.
- Only 2 cases (Firms A and J) showed a perfect match to Predicted Pattern 2.
- Finally, 5 cases (Firms B, C, G, H and I) resulted in a good match to Predicted Pattern 1.

9.3.2.3 Thematic Analysis

- The thematic analysis analyses the three open questions in the survey questionnaire. Each question is divided in to a main theme and sub-theme based on the directly quoted answers provided by the participants in the survey questionnaire.
- The first theme discusses the main problems for knowledge-sharing which are interpersonal trust, communication, collaboration issues, technology support problems, transparency, personal issues, attitude problems, managerial direction and department

issues, job security, reward systems, availability of time and language barriers. The reasons for knowledge-sharing were communication, resources, tools and collaboration motives.

- The second theme explained the main reasons for not being motivated to share/transfer knowledge. It also found that the main motivations for knowledge-sharing/transfer were managerial and employee motivations, tools for sharing/transferring knowledge, reward systems, meetings and sessions for knowledge-sharing/transfer, training, encouragement and feedback, environment and cultural motivations and, finally, decision-making and problem-solving.
- The third theme evaluates the main reasons for organisational success measured through financial and operational performance along with evaluations about what needs improvement in terms of both the financial and operational performance of the organisation.

9.4 Study Contributions

Knowledge management, the organisational culture setting of Saudi Arabia, knowledge-sharing enablers, intellectual capital factors and organisational success (financial and operational performance) have been researched separately in many previous studies. Some studies have, also conducted empirical investigations into this area. New studies advance existing bodies of knowledge. The current research study was conducted in order to provide a theoretical advancement in the area of knowledge management and organisational culture within Saudi Arabia's IT firms. The contributions to the existing body of knowledge and the implications for selected organisations regarding the adaptation of knowledge-based initiatives in Saudi Arabia based on the results of this study are outlined in the following sections, Sections 9.5 – 9.6.

9.5 Contribution to the Existing Body of Knowledge

The current study has provided a number of insights into the influence of organisational culture and knowledge environment factors on organisational success factors in Saudi Arabia's IT firms. Specific contributions to the current research body of knowledge are listed below:

- The study delivers practical indications on the significant relationships between the three main constructs (organisational culture, knowledge environment and organisational success) that present further understandings of the connection between

organisational culture and knowledge environment factors that relate to the organisational success outcome of the research model.

- Additional empirical evidence supports the argument that the organisational culture factors (interpersonal trust, communication, and technology support) and knowledge environment factors (knowledge-sharing type, knowledge-sharing approaches, knowledge-sharing process and intellectual capital) influence organisational success (operational and financial performance) within IT firms in Saudi Arabia.
- The study empirically developed reliable and valid measurement scales for the constructs of organisational culture, knowledge environment and organisational success. This was conducted in a knowledge management, and organisational culture setting in Saudi Arabia. Knowledge-sharing enablers, intellectual capital factors and organisational success performance were investigated in Saudi Arabia's IT organisational context.
- There is no existing research that investigates the influence of organisational culture and knowledge environment on IT organisations in Saudi Arabia. Therefore, this study enhanced the capability of organisational potential and filled the gap within the body of knowledge.
- The data analysis of the current study shows a need for further research of the main factors of intellectual capital. Further investigations are required to examine the differences between the management's and employees' role from a relational and structural capital perspective within the organsiation. The outcome of studying this relationship would provide further understanding of this study's main concepts.
- Despite the growing number of studies related to organisational culture and knowledge management, there is insufficient understanding of how an organisation can improve its performance through organisational culture, multiple knowledge-sharing practices and intellectual capital. Moreover, the combination of organisational culture, knowledge-sharing and intellectual capital is of great importance in the development of a knowledge-based organisation. This study develops a research framework of organisational culture, knowledge-sharing practices and intellectual capital and their impact on organisational success.
- This research specifically targeted Saudi Arabia as a developing country that is adopting a knowledge-based-economy. Little academic research has been dedicated to exploring the concept of organisational culture and knowledge-sharing enablers on

organisational success. This research will provide a significant foundation for understanding more about knowledge-sharing enablers from a Saudi Arabian IT organisational perspective.

- This study further contends that knowledge types, knowledge-sharing approaches and knowledge-sharing processes may have a direct influence on organisational success. The findings of this study will help organisations in recognising, planning and applying sufficient knowledge-sharing practices and the right organisational culture. In addition to this, the findings of this study will be of great significance in guiding IT firms in Saudi Arabia towards organisational success, particularly in relation to their operational and financial performance.
- The study aims to fill the existing gap in previous studies on Saudi Arabia's knowledge-based economy adaptation.

9.6 Practical Implications

This study investigates the influence of organisational culture and knowledge environment on organisational success in Saudi Arabia's IT firms as a key contributor to the country's prosperity. In order to achieve this objective, the current study developed a measurement model that effectively determines the organisational culture and knowledge environment factors that have a positive significant influence on organisational success in Saudi Arabia's IT firms.

The research model offers a number of practical and industrial implications that can guide managers in IT firms to enhance the organisational success in Saudi Arabia. These implications are summarised as follows:

Organisational culture, i.e. trust between employees, the communication between employees and organisation IT support for knowledge-sharing, are key aspects that foster organisational knowledge-sharing practices, as examined in this study, irrespective of whether the organisation is operated by Saudis or Non-Saudi employees. First, OC is an essential drive towards the knowledge types that are shared in the organisation, i.e., both tacit and explicit knowledge-sharing. Secondly, OC is also key in the knowledge collection and donation between employees. It is important that managers instil OC oriented towards trust, communication ease and support for knowledge sharing to enable employees to donate and collect both tacit and explicit knowledge. Managers should note that the role of OC would not differ between Saudis and Non-Saudi employees.

There some instances for practitioners to consider. First, interpersonal trust is high between most top managers and employees within organisations, employees thus do not hesitate to share feelings and points of view with their colleagues, which will enable the firm with superior competence in knowledge-sharing and help succussed in organisational performance. Second, from a communication point of view, managers and executives tend to communicate through meetings to encourage and support employees to share knowledge with each other, and that is one of the factors of an organisation culture that fosters collection and donation of tacit and explicit knowledge. Third, Employees in the IT organisations are facilitated by IT systems invested for sharing explicit knowledge. These tools allow employees and managers within different departments to exchange knowledge and benefit the organisation in problem solving and decision-making. Organisations that support their employees to use different tools such as email, intranet, and groupware and cloud computing are able to facilitate knowledge collection and donation within the organisation.

Supporting knowledge-sharing and creating organisational knowledge starts by recognising the extent of the organisation's knowledge environment. The organisation should focus on four key aspects, i.e., what knowledge is key to supporting its operations, how do employees share this knowledge, what is the extent of the organisation's expertise, what organisation processes and structures support employees, and what are the opportunities and resources embedded in the organisation's relationships. Answering these questions enables the organisation to shape its knowledge environment. There some differences in the knowledge environments of firms with Saudis and those with Non-Saudi employees. In organisations operated by Non-Saudi employees, the knowledge shared influences the knowledge-sharing approaches, knowledge-sharing processes and ultimately the organisation's intellectual capital. However, in Saudi operated firms, the focus on sharing tacit or explicit knowledge would not have an impact on the organisation's intellectual capital. Similarly, the organisation's knowledge-sharing approach, i.e., personalisation or codification would also not have an impact on the organisation's intellectual capital.

There some key issues that we note about the knowledge environment. First, employees tend to collect tacit knowledge from others based on their experience. This type of experience is usually through business trips and official training programs that helps in enhancing the employee's skills development within the organisation. Second, knowledge codification is captured where employees tend to collect data through recording, drawings and happenings for future use. The documentation of knowledge is always significant to capture in order to return

to past problems and solutions and this benefit the organisations highly in saving time and cost. Third, personalisation is completed through employees holding routine review meetings to discuss work progress and generate new ideas. This will help notify the problems and update tools within the organisation for the sake of knowledge-sharing.

Employees do share knowledge with their colleagues in order to collect knowledge from each other in the future. They also tend to share knowledge with each other when they are asked to by another colleague in the organisation, which facilitates the process of knowledge donation. The above knowledge-sharing processes occur in most IT firms irrespective of whether the majority of employees are Saudis or Non-Saudis. Enabling knowledge collection and knowledge donation is key in the development and utilisation of the organisation's intellectual capital. It is even more important for the organisation to foster knowledge collection and donation since majority of the firms have recognisable intellectual capital. For instance, most employees in the IT firms hold suitable work experience that supports accomplishing their jobs effectively. Additionally, majority of these firms had an easily accessible information system to support the knowledge-sharing practices of both managers and employees. IT organisations in the study also had a stable and good relationship with their strategic partners, as well as customers, which benefits the firms' future development.

Majority of the organisations indicate favourable financial performance, where they state that their return on investment is substantial compared to their key competitors. It is then important for organisations to recognise that their organisation culture fosters or constrains the ability of employees to share and apply knowledge, it enhances or limits access and use of information systems for knowledge sharing, and it may as well foster or constrain strategic relationships with partners and customers. Given any of such circumstances, practitioners ought to realise that these aspects will improve or frustrate the organisation's financial as well as operational performance and success. It is important to note, that among all aspects of organisation culture technology support and communication between employees are more critical to organisation performance. Although trust among employees as a factor of organisation culture will not affect the organisation's financial and operational success, it is a key factor in the organisation's knowledge environment, which ultimately affects the firm's performance.

Considering the above implications within the Saudi Arabian IT firms will support the establishment of a well-formed organisational culture, which enhances knowledge-sharing and increases knowledge flow in IT firms towards organisational success.

9.7 Limitations of the Study and Recommendations for Future Research

The current research has used a mixed-method and analytical approach to reach the presented results. However, as with all the studies that have been conducted over a long period, the findings should note the limitations of the research. The limitations of the study and recommendations for future research studies are listed in the following paragraphs.

This study focused on organisational culture practices, knowledge-sharing and intellectual capital enablers in designated IT organisations in Saudi Arabia. It discusses the extent to which the organisational culture and knowledge environment influence the success of IT organisations' performance. However, due to time and financial restrictions, no comparative study was commenced for any other similar or different settings in any other developing or developed country, which is a further research recommendation in this area of study.

Consequently, from a research methodological perspective, the sample and context are an issue for researchers. In the current study, a sample of 500 participants from 37 different IT organisations in Saudi Arabia's three regions (west, middle, and east) were taken under consideration for the survey questionnaire. In addition to this, 13 managers participated in semi-structured interviews. It is suggested that a larger number of organisations and participants be taken into deliberation in further future research. The findings of the study would be highly significant in linking the organisational culture factors, knowledge environment and organisational success in Saudi Arabia's IT firms. In addition to this, the result of the study could also be applied to other Gulf countries because they are held within the same cultural background, religion and traditions as Saudi Arabia.

The findings of the current research were based on the derived empirical analyses of the collected data from the survey questionnaire. The researcher attempted to ensure that all measurement items were promptly recognisable through the survey questionnaire, the pilot study and replication of any attempted result. The researcher had to control participants overlapping or the replication of answers while conducting the survey questionnaire. This is a limitation for researchers employing a survey questionnaire method. Thus, the major limitation of the survey method is based on participant's perception of personal feedback, which might reflect more than the actual situation. Therefore, it is recommended for future research to collect measurable variables from different sources in order to use different approaches to minimise the effect of any participant's inadequate and/or biased response.

The survey questionnaire conducted by the researcher was considered to be well developed and easily governed. It is strongly recommended that the survey questionnaire be used for future research to provide a greater opportunity for the country-wide research studies. Then, other researchers can help in ensuring a more reliable and valid instrument within the field of study.

Finally, the researcher has assessed the impact of the relationship between organisational culture and knowledge environment on the organisational success of Saudi Arabia's IT firm. However, the research has not attempted a direct cause and effect research model for this field of study. Therefore, it is highly recommended for future research to be conducted, that considers the examination of a direct cause and effect relationship between organisational culture, knowledge environment and organisational success in Saudi Arabia's IT firms. Using a mixed- method approach to conduct the data collection is highly recommended in order to validate the data through both quantitative and qualitative analysis. Using SEM will also help to verify and build a better understanding of the cause and effect relationships between variables in a direct and indirect approach with each other.

9.8 Significance of the Study

Despite the growing number of studies related to organisational culture and knowledge management, there is insufficient understanding of how an organisation can improve its performance through organisational culture, multiple knowledge-sharing practices and intellectual capital. Moreover, the combination of organisational culture, knowledge-sharing and intellectual capital is of great importance in the development of a knowledge-based organisation. This study developed a research framework that examines organisational culture, knowledge-sharing practices and intellectual capital in relation to organisational success.

This study further contends that knowledge types, knowledge-sharing approaches and knowledge-sharing processes may have a direct influence on organisational success. The findings of this study benefits organisations in recognising, planning and applying sufficient knowledge-sharing practices and a positive organisational culture. In addition to this, the findings of this study are of great significance in guiding IT firms in Saudi Arabia towards organisational success, particularly in terms of operational and financial performance.

The research approach has sufficiently addressed the research problems through the application of effective means to the data collected. Moreover, the research design has guided the researcher towards the purpose of the study and its main aims and objectives. Identifying the constructs in the research model for each variable is useful for defining the relationship

between organisational culture, knowledge environment and organisational success. The research model identifies factors for organisational success by establishing the role of the knowledge environment as a pivotal factor. Based on existing literature, the following factors were expedited for organisational culture (interpersonal trust, communication, and technology support), knowledge environment (knowledge-sharing types, approaches and process), and intellectual capital (human, structural and relational capital) and organisational success (financial and operational performance). The establishment of these factors from the research model helped the researcher to theoretically propose the relationship between organisational culture, knowledge environment and organisational success.

Additionally, a unified view of knowledge management and intellectual capital as two interdependent elements of an organisation's knowledge environment was developed. These two elements (knowledge management and intellectual capital) are interdependent underlying mechanisms that managers ought to consider when acknowledging the effects of organisational culture on organisational success. This research also hypothesised the relationship between the organisational culture, knowledge environment and its intellectual capital positively and significantly affect the success of an organisation. The association builds on the fact that knowledge management represents the flow of knowledge in the organisation, while intellectual capital represents the stock of knowledge of an organisation. This encourages researchers and practitioners to consider a reciprocated relationship between knowledge management and intellectual capital.

9.9 Conclusion

This study has evaluated the relationships between the main factors of organisational culture, knowledge environment and organisational success using a research model developed for this study. This evaluation was based on the main findings of this research, which are highly significant for Saudi Arabia's adaptation of a knowledge-based economy.

Based on the literature, two significant factors that foster organisational operations and performance were identified: knowledge management and intellectual capital. There are a number of areas for future study. One of the most important findings for this study is developing a method for how to integrate the knowledge management practices of an organisation with its intellectual capital to offer a comprehensive view of the knowledge environment of an organisation, where the knowledge environment of an organisation constitutes two core dimensions and three sub-dimensions under each core dimension. The

knowledge practices of an organisation (Dimension 1) constitutes the following sub-dimensions: types of knowledge shared, knowledge-sharing approaches, and knowledge-sharing processes. The intellectual capital of the organisation (Dimension 2) constitutes the following sub-dimensions: human capital, structural capital and relational capital. As such, the knowledge environment of an organisation is the knowledge practices of an organisation as it is a flow of knowledge and its intellectual capital is the stock of knowledge in the organisation, both of which facilitate value creation towards organisational success. Organisational culture factors include interpersonal trust among employees, communication within the organisation and IT support for knowledge-sharing. Trust and communication are social factors that not only drive employees' performance but are also emergent factors in organisational performance. IT support, on the other hand, is a technical factor identified in relation to knowledge management in the organisation. A great deal of existing literature on organisational performance and knowledge management treats organisational culture as an entirely social construct. Existing literature rarely discusses organisational culture from a socio-technical perspective. This study recognises that in the current evolution of technology, the social and the technical aspects in organisational management are fundamentally intertwined and we cannot completely extract the social roles from the technical roles. Therefore, this study examines organisational culture as a socio-technical factor that fosters organisational success with the mediating role of the organisation's knowledge environment.

The research model developed in this study investigated the relationship between organisational culture, knowledge environment and organisational success. The thesis hypothesises that the organisational culture, knowledge-sharing practices (knowledge-sharing types, knowledge-sharing approaches and knowledge-sharing process) and intellectual capital on firms is of great significance to organisational success. First, the knowledge types maintained and enabled by the organisation, i.e. explicit or tacit, are crucial for organisational success. Second, knowledge-sharing approaches that facilitate knowledge flow in the organisation, such as codification and personalisation influence knowledge-sharing among individuals. Third, the knowledge-sharing process consists of collection and donation of knowledge within the organsiation. The research model proposed that knowledge-sharing types, knowledge-sharing approaches and knowledge-sharing processes affect the intellectual capital of the organisation (human capital, structural capital, and relational capital), which in turn affects the organisation's success. Organisational culture is a critical factor for knowledge sharing in any organisation. This study followed a mixed methods approach which was chose

in order to strengthen and validate the findings of the research. The study thus involved two phases of data collection. The first phase involved a survey questionnaire of IT firms in Saudi Arabia. The survey generated quantitative findings on the variables of the study in Phase A. The technique employed during quantitative data analysis, which included descriptive data analyses, measurement scale analysis and PLS-SEM analysis. The qualitative study occurred in Phase B of the study analysis. This phase of the study used case study design, which involved conducting interviews for data collection. The study uses a qualitative data analysis for the case study research. This involves a within-case analysis followed by the cross-case analysis for the interview questionnaire and a thematic analysis for the survey questionnaire's three open questions.

This study was conducted in order to investigate the relationship among the above-stated phenomena. Consequently, while some research related to these topics does exist, no research has examined the relationships between these phenomena in the IT industry in Saudi Arabia. This existing study therefore provides highly significant data and background information to fill the gap in the body of knowledge.

The main aims and objectives of this research were achieved and practical recommendations for the research model components are made based on the data collected from the executives, managers and employees of Saudi Arabian IT organisations. The recommendations also assist in enabling a more effective use of organisational culture and knowledge environment in order to facilitate the organisational success in Saudi Arabia's IT firms.

Highlighting the research results and findings adds additional academic understanding and experience to the body of research examining organisational culture, knowledge-sharing, intellectual capital, and organisational success; by providing an empirical evidence with regards to these main concepts. More specifically, the results indicate that these main factors contribute positively towards the success of IT organisations in Saudi Arabia. These findings, therefore, have practical implications for executives, managers and employees within the IT industry in Saudi Arabia. The recommendations made in this thesis also facilitate effective communications from different channels so these organisations become more capable of successful performance. Finally, this study has suggested future directions of research to extend the findings of this study.

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Appendix

Appendix A

Survey Questionnaire

INFORMATION SHEET AND CONSENT FORM FOR ONLINE SURVEYS

The Influence of Organisational Culture and Knowledge Environment on Organisational Success in Saudi Arabia's IT Firms (UTS HREC ETH17-1319)

My name is Mujid Marwan Attar and I am an information systems PhD student at the School of Information Systems & Modelling (Faculty of Engineering and Information Technology) in the University of Technology Sydney. My supervisor is Dr.Kyeong Kang and my co-supervisor is Dr.Osama Sohaib.

The purpose of this survey is to investigate the influence of the organisation towards knowledge sharing and communication.

I will ask you to complete the survey face-to-face with me, and it will take no more than 20 minutes of your time.

You can change your mind at any time and stop completing the survey without consequences. You do not have to answer any questions you feel uncomfortable with answering.

If you agree to be part of the research and the data gathered from this survey to be published in a form that does not identify you, please continue with answering the survey questions.

If you have any concerns about the research that you think I or my supervisor can help you with, please feel free to contact me (us) on MujidMarwanO.Attar@student.uts.edu.au or Kyeong.Kang@uts.edu.au. If you would like to speak to a local contact person, please contact _____via email_____.

If you would like to talk to someone who is not connected with the research, you may contact the Research Ethics Officer on 02 9514 9772 or Research.ethics@uts.edu.au and quote this number UTS HREC ETH17-1319.

Section 1:Background Information

1) My organisation headquarter is located in Saudi Arabia.
☐ Yes ☐ No

2) Which region is your organisation located in.
☐ West Region ☐Middle Region ☐East Region

3) Type of organisation is: ☐Private sector ☐Public Sector
☐Semi Public ☐Non-Profit Organisation ☐Other

4) The number of people working in my organisation in Saudi Arabia are.
☐20 and less ☐21-50 ☐51-100

☐101-200 ☐201-500 ☐over 500

5) Number of years worked in this organisation is.
☐1-5 years ☐6-10 years ☐ 11-20 years ☐ Over 20 years

6) Your work experience is
☐1-5 years ☐6-10 years ☐ 11-20 years ☐ Over 20 years

7) What size is your current organisation.
☐ Small ☐Medium ☐ Large

8) My job title is:
☐ CEO/General Manager ☐ Project/PMO Manager
☐ Division Head ☐ Supervisor
☐ Team Leader ☐ Coordinator
☐ Consultant ☐ Engineer
☐ Administrator ☐ Instructor/Lecturer
☐ Staff ☐ Other_____

9) Nationality: ☐ Saudi ☐ Non-Saudi.
Country of origin (Optional)_____

10) If your Non-Saudi how long have you lived in Saudi Arabia.
☐Less than 5 years ☐ 5-10 years ☐ More than 10 years

11 Language: ☐ Arabic ☐ English
Other_____

12 Gender: ☐ Male ☐ Female

13 Education Level:
☐ Doctoral Degree ☐ Master's Degree
☐ Bachelor's Degree ☐ Diploma
☐ Other_____

Section 2 : Research Questionnaire

Using the fallowing scale, *please indicate to what extent you agree with each of the following statements:*

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

1. Organisational Culture

Interpersonal Trust

1) I don't hesitate to share my feelings and point of views with my colleagues.	1	2	3	4	5
2) In our company a considerable level of trust exists between co-workers.	1	2	3	4	5
3) I think that the company fulfils sharing feelings and point of views between employees.	1	2	3	4	5
4) Most of my colleagues are people whom I know and thus consider trustworthy.	1	2	3	4	5

Communication

5) My organisation members are satisfied with the degree of collaboration.	1	2	3	4	5
6) I think that the organisation encourages and supports employees to share their knowledge with one another.	1	2	3	4	5
7) There is a willingness to collaborate across organisational units within the organisation.	1	2	3	4	5
8) My organisation provides certain workshops, trainings, meetings with individuals and groups in order to enhance their communication skills.	1	2	3	4	5

Technology Support

9)I think that the company provides various tools and technologies to facilitate knowledge-sharing and exchange experiences such as emails, intranet, groupware and cloud computing.	1	2	3	4	5
10) My organisation use electronic storages to store and retrieve data/information/knowledge such as online databases and knowledge bases.	1	2	3	4	5
11) I think that there are technological tools available to encourage employees to collaborate for knowledge-sharing purposes.	1	2	3	4	5
12) I feel that a comfortable amount of knowledge-sharing technologies are available.	1	2	3	4	5

Open Question 1

What type of organisational problems within knowledge sharing and knowledge transfer do you have?

2. Executives and Managers Only

1) I think that having a trust relationship between executives and managers within the organisational culture is possible.	1	2	3	4	5
2) I think that executives and managers communicate with one another mainly through meetings.	1	2	3	4	5
3) I think that the organisation provide technical tools that help executive and mangers share knowledge with one another.	1	2	3	4	5

3. Knowledge Environment

a) Knowledge Sharing Types

Explicit

1) Employees in my organisation frequently share existing reports and official documents with members of my organisation.	1	2	3	4	5
2) Employees in my organisation are frequently offered training and development programs.	1	2	3	4	5
3) Employees in my organisation are facilitated by IT systems invested for knowledge sharing.	1	2	3	4	5

Tacit

4) Employees in my organisation frequently share knowledge based on their experience.	1	2	3	4	5
5) Employees in my organisation frequently collect knowledge from others based on their experience.	1	2	3	4	5

b) Knowledge Sharing Approaches

Please indicate for each item, to what extent each practice is actually followed in the department: (Nothing..... High)

Codification

1) Writing down and documenting the insights that are gained during work.	1	2	3	4	5
2) Capturing in writing/audio/video the experience narrated by employees.	1	2	3	4	5
3) Recording important data, drawings and happening for future use.	1	2	3	4	5

Personalisation

4) Reviewing customer feedback in team/group meeting as a learning exercise.	1	2	3	4	5
5) Holding routine review meetings to discuss work progress and generate new ideas.	1	2	3	4	5
6) Sharing (by an employee) his/her learning and experiences with other employees after returning from an official trip.	1	2	3	4	5

Open Question 2
How are you motivated to share/transfer knowledge within your organisation?

c) Knowledge Sharing Process

Collection

1) I often share with my colleagues the new working skills that I learn.	1	2	3	4	5
2) I often share with my colleagues the new information I acquire.	1	2	3	4	5
3) I think that knowledge-sharing between employees is considered as something typical in my organisation.	1	2	3	4	5

Donation

4) My colleagues often share with me the working skills they know when I ask them.	1	2	3	4	5
5) Staff in my organisation often exchanges knowledge of working skills and information.	1	2	3	4	5
6) My colleagues often share with me the information they know when I ask them.	1	2	3	4	5

d) Intellectual Capital

Human Capital

1) Employees hold suitable work experience for accomplishing their job successfully in my organisation.	1	2	3	4	5
2) Employees in my organisation have excellent professional skills particularly in their job functions.	1	2	3	4	5
3) The employees in my organisation often develop new ideas and knowledge.	1	2	3	4	5

Structural Capital

4) The overall operations of my organisation are very efficient.	1	2	3	4	5
5) My organisation responds to changes very quickly.	1	2	3	4	5
6) My organisation has an easily accessible information system.	1	2	3	4	5

Relational Capital

7) My organisation discovers and solves problems through intimate communication and effective collaboration.	1	2	3	4	5
8) My organisation maintains long-term relationships with customers and stakeholders.	1	2	3	4	5
9) My organisation has a stable and good relationship with the strategic partners.	1	2	3	4	5

4. Organisational Success

Operational Performance					
1) The customer satisfaction of my organisation is better than that of our key competitors.	1	2	3	4	5
2) The productivity of my organisation is better than that of our key competitors.	1	2	3	4	5
3) The responsiveness of my organisation is better than that of our key competitors.	1	2	3	4	5
4) The quality development of my organisation is better than that of our key competitors.	1	2	3	4	5
Financial Performance					
5) The return on investment of my organsiation is better than that of our key competitors.	1	2	3	4	5
6) The return on assets of my organisation is better than that of our key competitors.	1	2	3	4	5
7) The return on sales of my organisation is better that that of our key competitors.	1	2	3	4	5
8) The profit growth of my organisation is better than that of our key competitors.	1	2	3	4	5

Open Question 3
How do you evaluate your organisations success in terms of operational and financial performance?

END OF QUESTIONNAIRE

Appendix B

Descriptive Data Analysis Results

```
RELIABILITY
  /VARIABLES=OC_Q1  OC_Q2 OC_Q3  OC_Q4
  /SCALE('OC - Trust') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes		
Output Created	11-FEB-2018 19:45:30	
Comments		
Input	Data	/Users/ /Mujid Attar/DATA FILE FOR SEM.sav
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	N of Rows in Working Data File	500
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY /VARIABLES=OC_Q1 OC_Q2 OC_Q3 OC_Q4 /SCALE('OC - Trust') ALL /MODEL=ALPHA /SUMMARY=TOTAL.	
Resources	Processor Time	00:00:00.01
	Elapsed Time	00:00:00.00

Scale: OC – Interpersonal Trust

Case Processing Summary			
	N	%	
Cases	Valid	500	100.0
	Excluded[a]	0	.0
	Total	500	100.0
a. List wise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.753	4

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
OC_Q1	10.9640	5.486	.420	.767
OC_Q2	11.0420	4.986	.638	.648
OC_Q3	11.2060	5.030	.595	.670
OC_Q4	11.1520	5.043	.556	.691

```
RELIABILITY
  /VARIABLES=OC_Q5  OC_Q6 OC_Q7 OC_Q8
  /SCALE('OC - Communication')  ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes		
Output Created	11-FEB-2018 19:45:49	
Comments		
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	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	500
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY /VARIABLES=OC_Q5 OC_Q6 OC_Q7 OC_Q8 /SCALE('OC - Communication') ALL /MODEL=ALPHA /SUMMARY=TOTAL.	
Resources	Processor Time	00:00:00.01
	Elapsed Time	00:00:00.00

Scale: OC – Communication

Case Processing Summary			
	N	%	
Cases	Valid	500	100.0
	Excluded[a]	0	.0
	Total	500	100.0
a. List wise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.755	4

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
OC_Q5	11.2260	5.474	.536	.706
OC_Q6	10.7940	5.358	.582	.682
OC_Q7	11.2100	5.024	.649	.643
OC_Q8	11.1100	5.449	.452	.756

```
RELIABILITY
  /VARIABLES=OC_Q9  OC_Q10 OC_Q11  OC_Q12
  /SCALE('OC - Technology Support') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes		
Output Created	11-FEB-2018 19:46:06	
Comments		
Input	Data	/Users/ Student/Mujid Attar/DATA FILE FOR SEM.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	500
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for

		all variables in the procedure.
Syntax	RELIABILITY /VARIABLES=OC_Q9 OC_Q10 OC_Q11 OC_Q12 /SCALE('OC - Technology Support') ALL /MODEL=ALPHA /SUMMARY=TOTAL.	
Resources	Processor Time	00:00:00.01
	Elapsed Time	00:00:00.00

Scale: OC - Technology Support

Case Processing Summary

		N	%
Cases	Valid	499	99.8
	Excluded[a]	1	.2
	Total	500	100.0

a. List wise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.840	4

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
OC_Q9	11.5972	6.012	.635	.815
OC_Q10	11.6934	5.823	.664	.802
OC_Q11	11.7234	5.743	.689	.791
OC_Q12	11.8136	5.694	.707	.783

```
RELIABILITY

  /VARIABLES=KST1  KST2 KST3
  /SCALE('KST - Explicit') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes		
Output Created	11-FEB-2018 19:46:41	
Comments		
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	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	500
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY /VARIABLES=KST1 KST2 KST3 /SCALE('KST - Explicit') ALL /MODEL=ALPHA /SUMMARY=TOTAL.	
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Scale: KST – Explicit

Case Processing Summary			
	N	%	
Cases	Valid	500	100.0
	Excluded[a]	0	.0
	Total	500	100.0
a. List wise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.762	3

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
KST1	7.1780	3.076	.538	.742
KST2	7.2220	2.766	.601	.673
KST3	6.8960	2.839	.645	.624

```
RELIABILITY
  /VARIABLES=KST4  KST5
  /SCALE('KST - Tacit') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes		
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Comments		
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	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	500
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY /VARIABLES=KST4 KST5 /SCALE('KST - Tacit') ALL /MODEL=ALPHA /SUMMARY=TOTAL.	
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Scale: KST – Tacit

Case Processing Summary			
	N	%	
Cases	Valid	500	100.0
	Excluded[a]	0	.0
	Total	500	100.0
a. List wise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.802	2

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
KST4	3.6560	.795	.670	.
KST5	3.6240	.872	.670	.

```
RELIABILITY
  /VARIABLES=KSA1  KSA2 KSA3
  /SCALE('KSA - Codification') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes		
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Comments		
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	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	500
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY /VARIABLES=KSA1 KSA2 KSA3	

	/SCALE('KSA - Codification') ALL /MODEL=ALPHA /SUMMARY=TOTAL.	
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Scale: KSA - Codification

Case Processing Summary			
	N	%	
Cases	Valid	500	100.0
	Excluded[a]	0	.0
	Total	500	100.0
a. List wise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.783	3

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
KSA1	6.4740	3.200	.633	.693
KSA2	6.7380	3.063	.633	.692
KSA3	6.3600	3.217	.597	.731

```
RELIABILITY
  /VARIABLES=KSA4  KSA5 KSA6
  /SCALE('KSA - Personalization') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes		
Output Created	11-FEB-2018 19:47:26	
Comments		
Input	Data	/Users /Mujid Attar/DATA FILE FOR SEM.sav
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	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	500
	Matrix Input	

Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY /VARIABLES=KSA4 KSA5 KSA6 /SCALE('KSA - Personalization') ALL /MODEL=ALPHA /SUMMARY=TOTAL.	
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Scale: KSA – Personalisation

Case Processing Summary

		N	%
Cases	Valid	499	99.8
	Excluded[a]	1	.2
	Total	500	100.0

a. List wise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.817	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
KSA4	6.7896	3.648	.705	.711
KSA5	6.6513	4.011	.647	.771
KSA6	7.0040	3.582	.658	.762

```
RELIABILITY
  /VARIABLES=KSP1  KSP2 KSP3
  /SCALE('KSP - Collection') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes		
Output Created	11-FEB-2018 19:47:43	
Comments		
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	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	500
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY /VARIABLES=KSP1 KSP2 KSP3 /SCALE('KSP - Collection') ALL /MODEL=ALPHA /SUMMARY=TOTAL.	
Resources	Processor Time	00:00:00.01
	Elapsed Time	00:00:00.00

Scale: KSP – Collection

Case Processing Summary			
	N	%	
Cases	Valid	500	100.0
	Excluded[a]	0	.0
	Total	500	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.821	3

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
KSP1	7.4340	2.743	.738	.690
KSP2	7.3920	2.852	.716	.715
KSP3	7.6780	2.860	.583	.853

RELIABILITY

```
/VARIABLES=KSP4  KSP5 KSP6
/SCALE('KSP - Donation') ALL
/MODEL=ALPHA
/SUMMARY=TOTAL.
```

Reliability

Notes		
Output Created	11-FEB-2018 19:47:57	
Comments		
Input	Data	/Users /Mujid Attar/DATA FILE FOR SEM.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	500
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY /VARIABLES=KSP4 KSP5 KSP6 /SCALE('KSP - Donation') ALL /MODEL=ALPHA /SUMMARY=TOTAL.	
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Scale: KSP - Donation

Case Processing Summary			
	N	%	
Cases	Valid	500	100.0
	Excluded[a]	0	.0
	Total	500	100.0
a. List wise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.805	3

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
KSP4	7.4120	2.720	.660	.725
KSP5	7.6340	2.589	.621	.771
KSP6	7.2620	2.759	.681	.706

```
RELIABILITY
  /VARIABLES=IC1  IC2 IC3
  /SCALE('IC - Human Capital') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes		
Output Created	11-FEB-2018 19:48:11	
Comments		
Input	Data	/Users/ /Mujid Attar/DATA FILE FOR SEM.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	500
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY /VARIABLES=IC1 IC2 IC3 /SCALE('IC - Human Capital') ALL /MODEL=ALPHA /SUMMARY=TOTAL.	
Resources	Processor Time	00:00:00.01
	Elapsed Time	00:00:00.00

Scale: IC - Human Capital

Case Processing Summary			
	N	%	
Cases	Valid	500	100.0
	Excluded[a]	0	.0
	Total	500	100.0
a. Listwise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.797	3

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
IC1	7.2580	2.781	.621	.744
IC2	7.2840	2.585	.713	.648
IC3	7.4580	2.605	.595	.776

```
RELIABILITY
  /VARIABLES=IC4  IC5 IC6
  /SCALE('IC - Structural Capital') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes		
Output Created	11-FEB-2018 19:48:25	
Comments		
Input	Data	/Users/ Mujid Attar/DATA FILE FOR SEM.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	500
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY	

	/VARIABLES=IC4 IC5 IC6 /SCALE('IC - Structural Capital') ALL /MODEL=ALPHA /SUMMARY=TOTAL.	
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

Scale: IC - Structural Capital

Case Processing Summary

		N	%
Cases	Valid	500	100.0
	Excluded[a]	0	.0
	Total	500	100.0

a. List wise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.759	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
IC4	7.2780	2.919	.634	.631
IC5	7.3440	2.575	.631	.629
IC6	7.1260	3.120	.512	.761

```
RELIABILITY
  /VARIABLES=IC7  IC8 IC9
  /SCALE('IC - Relational Capital') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes

Output Created	11-FEB-2018 19:48:42	
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	Active Dataset	DataSet1
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	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	500
	Matrix Input	

Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY /VARIABLES=IC7 IC8 IC9 /SCALE('IC - Relational Capital') ALL /MODEL=ALPHA /SUMMARY=TOTAL.	
Resources	Processor Time	00:00:00.01
	Elapsed Time	00:00:00.00

Scale: IC - Relational Capital

Case Processing Summary			
	N	%	
Cases	Valid	500	100.0
	Excluded[a]	0	.0
	Total	500	100.0
a. List wise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.817	3

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
IC7	7.8600	2.898	.576	.840
IC8	7.5700	2.574	.739	.675
IC9	7.5380	2.634	.698	.718

```
RELIABILITY
  /VARIABLES=OS1  OS2 OS3 OS4
  /SCALE('OS - Operational Performance') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes		
Output Created	11-FEB-2018 19:49:04	
Comments		
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	Active Dataset	DataSet1
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	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	500
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY /VARIABLES=OS1 OS2 OS3 OS4 /SCALE('OS - Operational Performance') ALL /MODEL=ALPHA /SUMMARY=TOTAL.	
Resources	Processor Time	00:00:00.01
	Elapsed Time	00:00:00.00

Scale: OS - Operational Performance

Case Processing Summary			
	N	%	
Cases	Valid	500	100.0
	Excluded[a]	0	.0
	Total	500	100.0
a. List wise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.886	4

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
OS1	11.2400	5.990	.764	.847
OS2	11.2740	6.296	.761	.850
OS3	11.3460	6.054	.757	.850
OS4	11.3140	6.204	.720	.864

```
RELIABILITY
  /VARIABLES=OS5  OS6 OS7 OS8
  /SCALE('OS - Financial Performance') ALL
  /MODEL=ALPHA
  /SUMMARY=TOTAL.
```

Reliability

Notes		
Output Created	11-FEB-2018 19:49:18	
Comments		
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	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	500
	Matrix Input	
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the procedure.
Syntax	RELIABILITY /VARIABLES=OS5 OS6 OS7 OS8 /SCALE('OS - Financial Performance') ALL /MODEL=ALPHA /SUMMARY=TOTAL.	
Resources	Processor Time	00:00:00.01
	Elapsed Time	00:00:00.00

Scale: OS - Financial Performance

Case Processing Summary			
	N	%	
Cases	Valid	500	100.0
	Excluded[a]	0	.0
	Total	500	100.0
a. List wise deletion based on all variables in the procedure.			

Reliability Statistics	
Cronbach's Alpha	N of Items
.884	4

Item-Total Statistics				
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
OS5	11.0420	5.936	.753	.849
OS6	11.0620	6.018	.748	.851
OS7	11.0880	5.908	.762	.845
OS8	11.1000	5.677	.730	.859

```
DATASET ACTIVATE DataSet1.
COMPUTE OC_Trust= SUM (OC_Q1,OC_Q2,OC_Q3,OC_Q4).
COMPUTE OC_Communication= SUM (OC_Q5,OC_Q6,OC_Q7,OC_Q8).
COMPUTE OC_TechSupport= SUM (OC_Q9,OC_Q10,OC_Q11,OC_Q12).
COMPUTE KST_Ex= SUM (KST1,KST2,KST3).
COMPUTE KST_Tacit=SUM(KST4, KST5).
COMPUTE KSA_Codification=SUM(KSA1,KSA2,KSA3).
COMPUTE KSA_Person=SUM(KSA4,KSA5,KSA6).
COMPUTE KSP_Collection=SUM(KSP1,KSP2,KSP3).
COMPUTE KSP_Donation=SUM(KSP4,KSP5,KSP6).
COMPUTE IC_Human=SUM(IC1,IC2,IC3).
COMPUTE IC_Structural=SUM(IC4,IC5,IC6).
COMPUTE IC_Relational=SUM(IC7,IC8,IC9).
COMPUTE OS_Oper=SUM(OS1,OS2,OS3,OS4).
COMPUTE OS_Finan=SUM(OS5,OS6,OS7,OS8).
EXECUTE.
DESCRIPTIVES VARIABLES=OC_Trust OC_Communication OC_TechSupport KST_Ex
KST_Tacit KSA_Codification
   KSA_Person KSP_Collection KSP_Donation IC_Human IC_Structural IC_Relational
OS_Oper OS_Finan
  /STATISTICS=MEAN STDDEV MIN MAX.
```

Descriptive

Notes		
Output Created	11-FEB-2018 19:54:53	
Comments		
Input	Data	/Users/ /Mujid Attar/DATA FILE FOR SEM.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	500
Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.
	Cases Used	All non-missing data are used.
Syntax	DESCRIPTIVES VARIABLES=OC_Trust OC_Communication OC_TechSupport KST_Ex KST_Tacit KSA_Codification KSA_Person KSP_Collection KSP_Donation IC_Human IC_Structural IC_Relational OS_Oper OS_Finan /STATISTICS=MEAN STDDEV MIN MAX.	
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

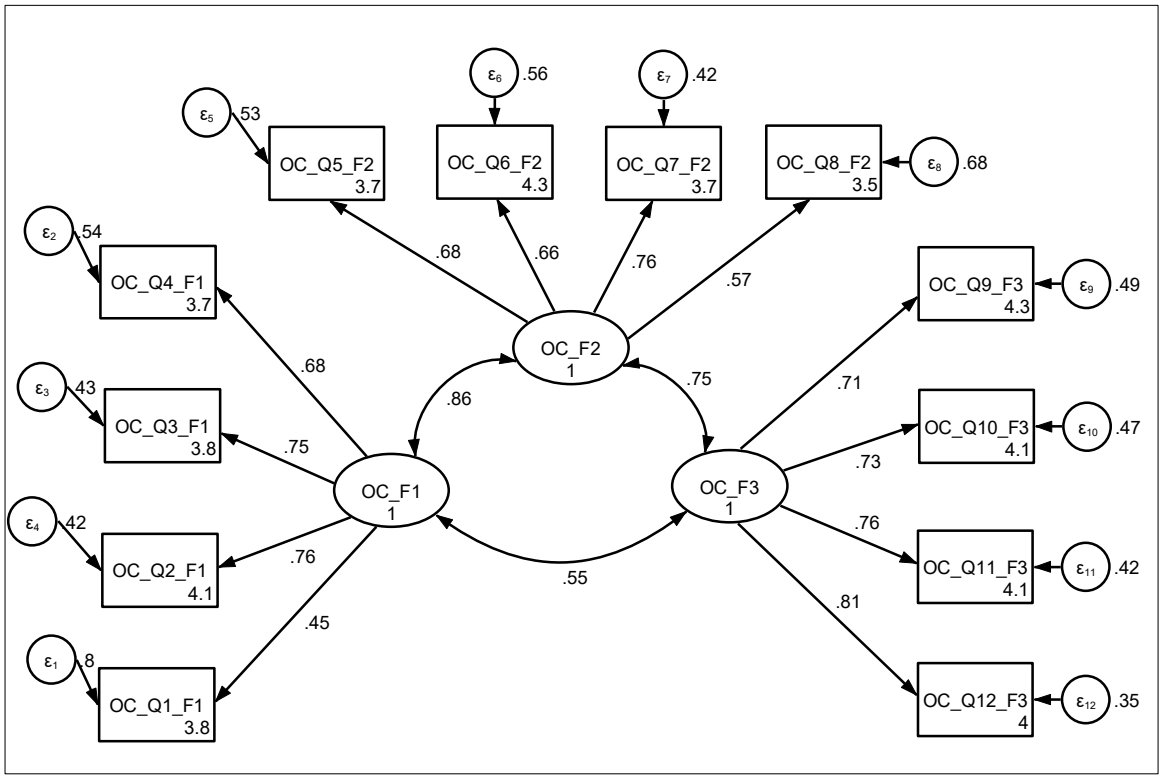
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
OC_Trust	500	6.00	20.00	14.7880	2.90447
OC_Communication	500	5.00	20.00	14.7800	2.95856
OC_TechSupport	500	5.00	20.00	15.6020	3.13484
KST_Ex	500	3.00	15.00	10.6480	2.41241
KST_Tacit	500	2.00	10.00	7.2800	1.66828
KSA_Codification	500	3.00	15.00	9.7860	2.53240
KSA_Person	500	3.00	15.00	10.2180	2.77811
KSP_Collection	500	3.00	15.00	11.2520	2.41250
KSP_Donation	500	3.00	15.00	11.1540	2.34804
IC_Human	500	3.00	15.00	11.0000	2.32956
IC_Structural	500	3.00	15.00	10.8740	2.40118
IC_Relational	500	4.00	15.00	11.4840	2.35985
OS_Oper	500	4.00	20.00	15.0580	3.24155
OS_Finan	500	4.00	20.00	14.7640	3.17371
Valid N (list wise)	500				

Appendix C

Confirmatory Factors Analysis Models Results

CFA Model One – 3 Factor OC



CFA Structure

```
------------------------------------------------------------------------------
             |                 OIM
Standardized |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
Measurement  |
  OC_Q1_F1 <-|
        OC_F1|   .4520429   .0403101    11.21   0.000     .3730367    .5310492
       _cons |    3.84108   .1295664    29.65   0.000     3.587134    4.095025
-------------+----------------------------------------------------------------
  OC_Q4_F1 <-|
        OC_F1|   .6756361   .0296687    22.77   0.000     .6174866    .7337857
       _cons |   3.723551   .1260818    29.53   0.000     3.476435    3.970667
-------------+----------------------------------------------------------------
  OC_Q3_F1 <-|
```

```
        OC_F1 |   .7527731   .0256987    29.29   0.000     .7024045    .8031417
        _cons |   3.798793   .1283112    29.61   0.000     3.547308    4.050278
--------------+------------------------------------------------------------------
OC_Q2_F1 <-   |
        OC_F1 |   .7589038   .0255451    29.71   0.000     .7088364    .8089713
        _cons |   4.089021   .1369584    29.86   0.000     3.820587    4.357454
--------------+------------------------------------------------------------------
OC_Q9_F3 <-   |
        OC_F3 |   .7136261   .0267279    26.70   0.000     .6612404    .7660118
        _cons |   4.272903   .1424721    29.99   0.000     3.993663    4.552144
--------------+------------------------------------------------------------------
OC_Q10_F3 <-  |
        OC_F3 |   .7312611   .0255002    28.68   0.000     .6812815    .7812406
        _cons |   4.085274   .1368463    29.85   0.000      3.81706    4.353488
--------------+------------------------------------------------------------------
OC_Q11_F3 <-  |
        OC_F3 |   .7638678   .0235632    32.42   0.000     .7176849    .8100507
        _cons |   4.062678   .1361706    29.84   0.000     3.795788    4.329567
--------------+------------------------------------------------------------------
OC_Q12_F3 <-  |
        OC_F3 |   .8078671   .0212824    37.96   0.000     .7661544    .8495798
        _cons |   3.982984   .1337907    29.77   0.000     3.720759    4.245209
--------------+------------------------------------------------------------------
OC_Q5_F2 <-   |
        OC_F2 |   .6838979   .0284073    24.07   0.000     .6282206    .7395753
        _cons |   3.744291   .1266958    29.55   0.000     3.495972     3.99261
--------------+------------------------------------------------------------------
OC_Q6_F2 <-   |
        OC_F2 |    .661758   .0296106    22.35   0.000     .6037222    .7197937
        _cons |   4.259833   .1420794    29.98   0.000     3.981363    4.538304
--------------+------------------------------------------------------------------
OC_Q7_F2 <-   |
        OC_F2 |   .7634481   .0243683    31.33   0.000      .715687    .8112091
        _cons |   3.707843   .1256171    29.52   0.000     3.461638    3.954048
```

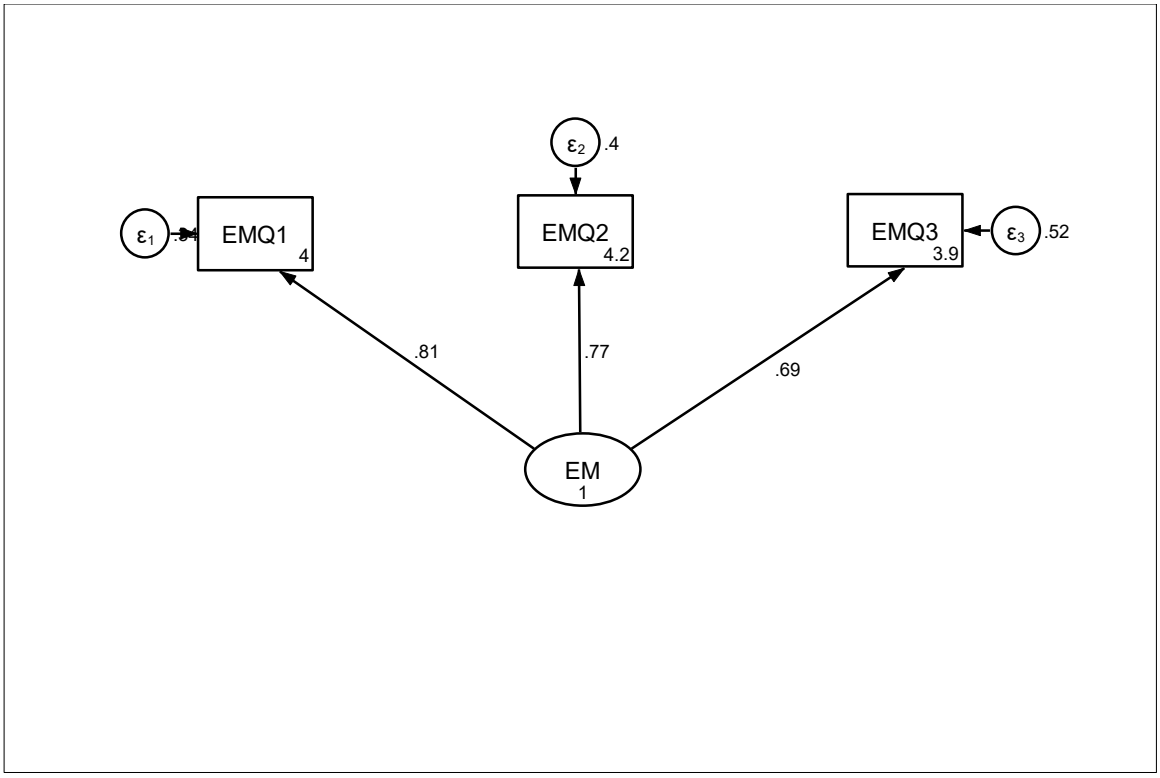
```
  -------------+----------------------------------------------------------------
  OC_Q8_F2 <-  |
          OC_F2 |   .5676155   .0348692    16.28   0.000     .4992732    .6359579
          _cons |   3.506441    .119682    29.30   0.000     3.271868    3.741013
---------------+----------------------------------------------------------------
 var(e.OC_Q1_F1)|   .7956572   .0364438                      .7273411    .8703899
 var(e.OC_Q4_F1)|   .5435158   .0400905                      .4703557    .6280555
 var(e.OC_Q3_F1)|   .4333327   .0386906                      .3637649    .5162048
 var(e.OC_Q2_F1)|    .424065   .0387725                      .3544921    .5072923
 var(e.OC_Q9_F3)|   .4907378   .0381474                      .4213873    .5715016
var(e.OC_Q10_F3)|   .4652572   .0372946                      .3976139    .5444083
var(e.OC_Q11_F3)|    .416506   .0359983                       .351603    .4933895
var(e.OC_Q12_F3)|   .3473507   .0343867                      .2860894    .4217301
 var(e.OC_Q5_F2)|   .5322836   .0388554                      .4613254    .6141561
 var(e.OC_Q6_F2)|   .5620764   .0391901                      .4902824    .6443835
 var(e.OC_Q7_F2)|   .4171471   .0372079                      .3502396     .496836
 var(e.OC_Q8_F2)|   .6778126   .0395846                      .6045038    .7600116
      var(OC_F1)|          1          .                             .           .
      var(OC_F3)|          1          .                             .           .
      var(OC_F2)|          1          .                             .           .
---------------+----------------------------------------------------------------
cov(OC_F1,OC_F3)|    .554564   .0417218    13.29   0.000     .4727908    .6363372
cov(OC_F1,OC_F2)|   .8645752     .02727    31.70   0.000      .811127    .9180234
cov(OC_F3,OC_F2)|    .753581   .0324113    23.25   0.000     .6900561    .8171058
------------------------------------------------------------------------------
LR test of model vs. saturated: chi2(51)  =    197.49, Prob > chi2 = 0.0000
```

Goodness of Fit Statistics

```
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
         chi2_ms(51) |    197.493   model vs. saturated
```

```
            p > chi2 |      0.000
         chi2_bs(66) |   2474.802   baseline vs. saturated
            p > chi2 |      0.000
---------------------+-----------------------------------------------------
Population error     |
               RMSEA |      0.076   Root mean squared error of approximation
 90% CI, lower bound |      0.065
         upper bound |      0.087
              pclose |      0.000   Probability RMSEA <= 0.05
---------------------+-----------------------------------------------------
Information criteria |
                 AIC |  14309.931   Akaike's information criterion
                 BIC |  14474.223   Bayesian information criterion
---------------------+-----------------------------------------------------
Baseline comparison  |
                 CFI |      0.939   Comparative fit index
                 TLI |      0.921   Tucker-Lewis index
---------------------+-----------------------------------------------------
Size of residuals    |
                SRMR |      0.055   Standardized root mean squared residual
                  CD |      0.979   Coefficient of determination
```

CFA Model Two – EM



CFA Structure

```
------------------------------------------------------------------------------
             |                 OIM
Standardized |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
Measurement  |
  EMQ1 <-    |
          EM |    .811954   .0330752    24.55   0.000     .7471279    .8767801
       _cons |   4.004298   .1600533    25.02   0.000     3.690599    4.317996
  -----------+----------------------------------------------------------------
  EMQ2 <-    |
          EM |    .774399   .0339166    22.83   0.000     .7079238    .8408743
       _cons |   4.191808   .1667335    25.14   0.000     3.865016    4.518599
  -----------+----------------------------------------------------------------
  EMQ3 <-    |
          EM |   .6922673   .0364131    19.01   0.000     .6208989    .7636357
```

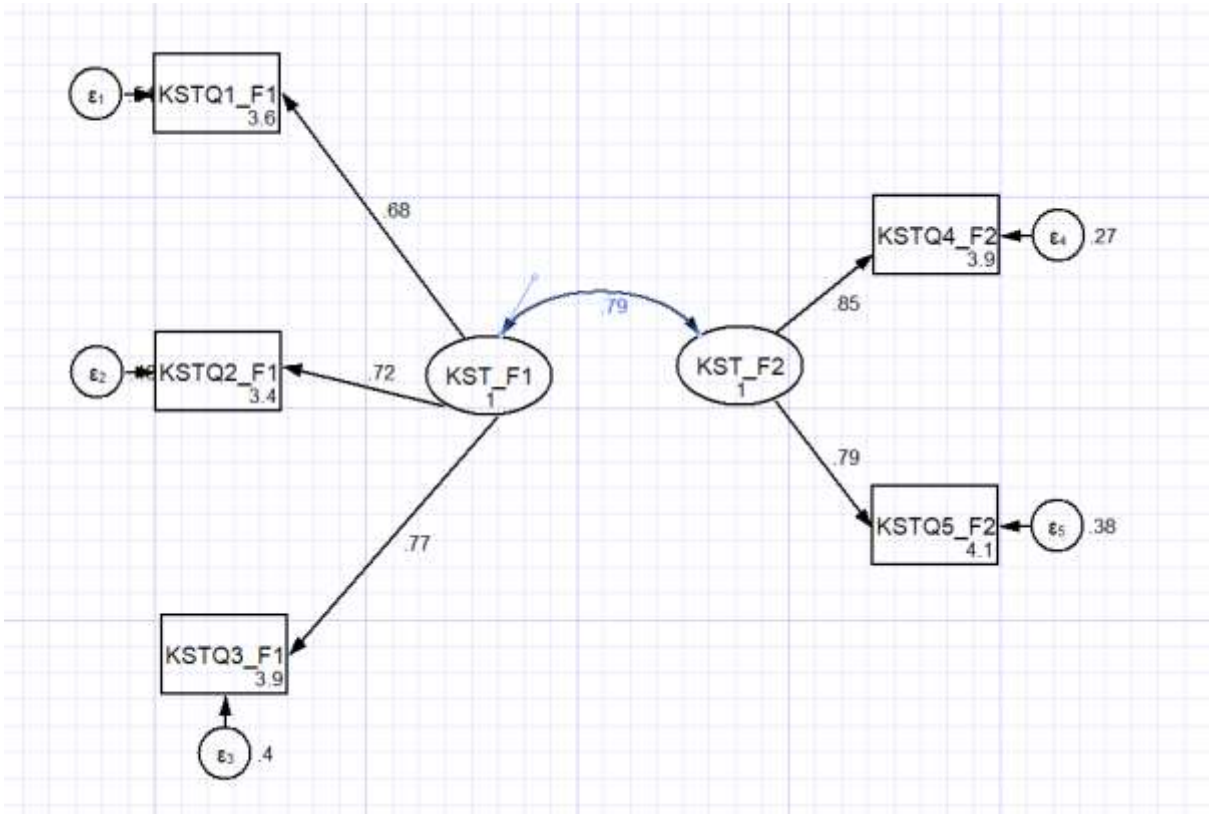
```
       _cons |   3.932454   .1575027    24.97   0.000     3.623754    4.241153
-------------+------------------------------------------------------------
  var(e.EMQ1)|   .3407307    .053711                      .2501683    .4640772
  var(e.EMQ2)|   .4003061   .0525299                      .3095237    .5177148
  var(e.EMQ3)|    .520766   .0504152                      .4307626    .6295747
      var(EM)|          1          .                            .           .
------------------------------------------------------------------------------
LR test of model vs. saturated: chi2(0)   =      0.00, Prob > chi2 =      .
```

Goodness of Fit Statistics

```
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
          chi2_ms(0) |      0.000   model vs. saturated
            p > chi2 |          .
          chi2_bs(3) |    340.366   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
               RMSEA |      0.000   Root mean squared error of approximation
 90% CI, lower bound |      0.000
         upper bound |      0.000
              pclose |      1.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                 AIC |   2490.090   Akaike's information criterion
                 BIC |   2524.863   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                 CFI |      1.000   Comparative fit index
```

```
                TLI |      1.000   Tucker-Lewis index
--------------------+-----------------------------------------------------
Size of residuals   |
               SRMR |      0.000   Standardized root mean squared residual
                 CD |      0.813   Coefficient of determination
```

KST Two Factors –

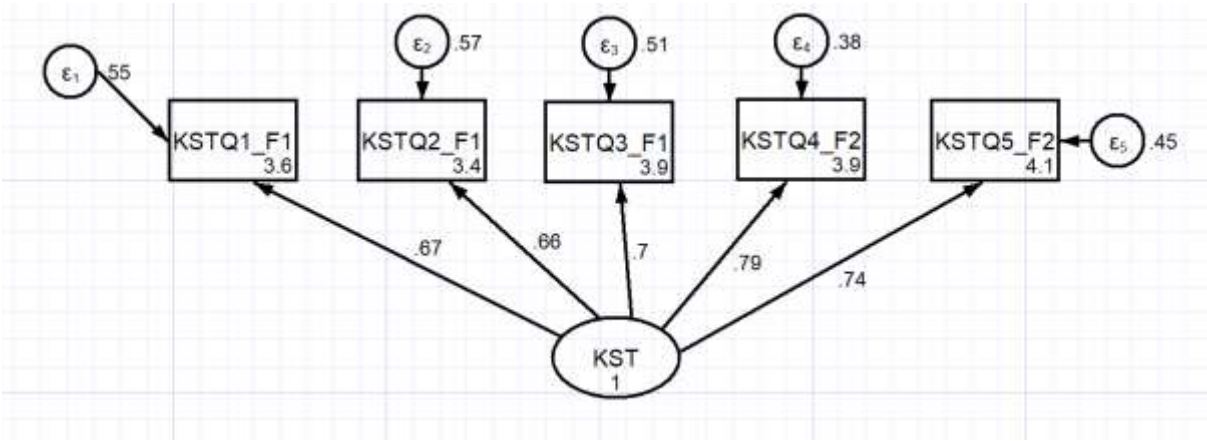


Goodness of Fit Statistics

```
------------------------------------------------------------------------------
Fit statistic       |      Value   Description
--------------------+---------------------------------------------------------
Likelihood ratio    |
          chi2_ms(4) |     18.616   model vs. saturated
            p > chi2 |      0.001
         chi2_bs(10) |    950.848   baseline vs. saturated
            p > chi2 |      0.000
--------------------+---------------------------------------------------------
Population error    |
```

RMSEA	0.085	Root mean squared error of approximation
90% CI, lower bound	0.049	
upper bound	0.126	
pclose	0.055	Probability RMSEA <= 0.05
Information criteria		
AIC	5933.743	Akaike's information criterion
BIC	6001.177	Bayesian information criterion
Baseline comparison		
CFI	0.984	Comparative fit index
TLI	0.961	Tucker-Lewis index
Size of residuals		
SRMR	0.028	Standardized root mean squared residual
CD	0.929	Coefficient of determination

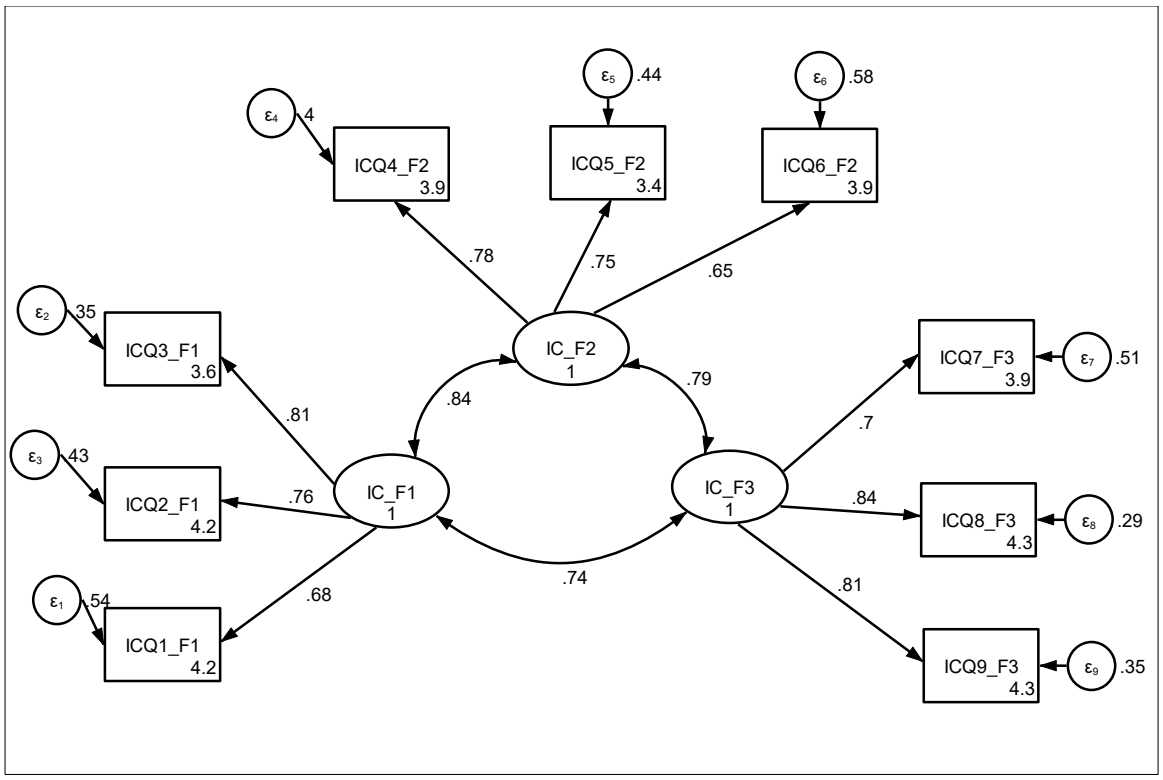
KST One Factors



Fit statistic	Value	Description

```
Likelihood ratio     |
          chi2_ms(5) |     78.390   model vs. saturated
            p > chi2 |      0.000
         chi2_bs(10) |    950.848   baseline vs. saturated
            p > chi2 |      0.000
---------------------+-----------------------------------------------------
Population error     |
               RMSEA |      0.171   Root mean squared error of approximation
 90% CI, lower bound |      0.139
         upper bound |      0.206
              pclose |      0.000   Probability RMSEA <= 0.05
---------------------+-----------------------------------------------------
Information criteria |
                 AIC |   5991.518   Akaike's information criterion
                 BIC |   6054.737   Bayesian information criterion
---------------------+-----------------------------------------------------
Baseline comparison  |
                 CFI |      0.922   Comparative fit index
                 TLI |      0.844   Tucker-Lewis index
---------------------+-----------------------------------------------------
Size of residuals    |
                SRMR |      0.052   Standardized root mean squared residual
                  CD |      0.843   Coefficient of determination
------------------------------------------------------------------------------
```

CFA Model One – 3 Factor IC



CFA Structure

```
------------------------------------------------------------------------------
               |                 OIM
   Standardized |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
---------------+--------------------------------------------------------------
Measurement    |
  ICQ1_F1 <-   |
         IC_F1 |   .6794044   .0310843    21.86   0.000     .6184802    .7403286
         _cons |   4.195668    .140013    29.97   0.000     3.921248    4.470089
  -------------+--------------------------------------------------------------
  ICQ3_F1 <-   |
         IC_F1 |   .8076583   .0235147    34.35   0.000     .7615704    .8537462
         _cons |   3.637394   .1234125    29.47   0.000      3.39551    3.879278
  -------------+--------------------------------------------------------------
  ICQ2_F1 <-   |
         IC_F1 |   .7568923    .026952    28.08   0.000     .7040673    .8097173
         _cons |   4.166757   .1391469    29.95   0.000     3.894034     4.43948
  -------------+--------------------------------------------------------------
```

```
  ICQ7_F3 <-    |
          IC_F3 |   .6974383   .0286697    24.33   0.000     .6412467    .7536299
          _cons |   3.920132   .1317856    29.75   0.000     3.661837    4.178427
  --------------+------------------------------------------------------------------
  ICQ8_F3 <-    |
          IC_F3 |   .8442789   .0199517    42.32   0.000     .8051744    .8833835
          _cons |   4.294611   .1429814    30.04   0.000     4.014372    4.574849
  --------------+------------------------------------------------------------------
  ICQ9_F3 <-    |
          IC_F3 |   .8081074   .0212529    38.02   0.000     .7664525    .8497623
          _cons |   4.287398   .1427648    30.03   0.000     4.007585    4.567212
  --------------+------------------------------------------------------------------
  ICQ4_F2 <-    |
          IC_F2 |   .7756107   .0247207    31.37   0.000     .7271591    .8240624
          _cons |   3.903203   .1312821    29.73   0.000     3.645894    4.160511
  --------------+------------------------------------------------------------------
  ICQ5_F2 <-    |
          IC_F2 |   .7480149   .0259544    28.82   0.000     .6971451    .7988846
          _cons |   3.395016   .1163019    29.19   0.000     3.167068    3.622963
  --------------+------------------------------------------------------------------
  ICQ6_F2 <-    |
          IC_F2 |   .6450723   .0315137    20.47   0.000     .5833067     .706838
          _cons |   3.923594   .1318886    29.75   0.000     3.665097    4.182091
 ---------------+------------------------------------------------------------------
  var(e.ICQ1_F1)|   .5384097   .0422377                      .4616757    .6278975
  var(e.ICQ3_F1)|    .347688   .0379836                       .280672    .4307054
  var(e.ICQ2_F1)|   .4271141   .0407995                       .354188    .5150552
  var(e.ICQ7_F3)|   .5135798   .0399907                      .4408875    .5982574
  var(e.ICQ8_F3)|   .2871931   .0336895                      .2282037    .3614309
  var(e.ICQ9_F3)|   .3469624   .0343492                      .2857681     .421261
  var(e.ICQ4_F2)|    .398428   .0383473                      .3299322    .4811439
  var(e.ICQ5_F2)|   .4404737   .0388286                      .3705826    .5235462
  var(e.ICQ6_F2)|   .5838817   .0406572                      .5093936    .6692621
      var(IC_F1)|          1          .                             .           .
```

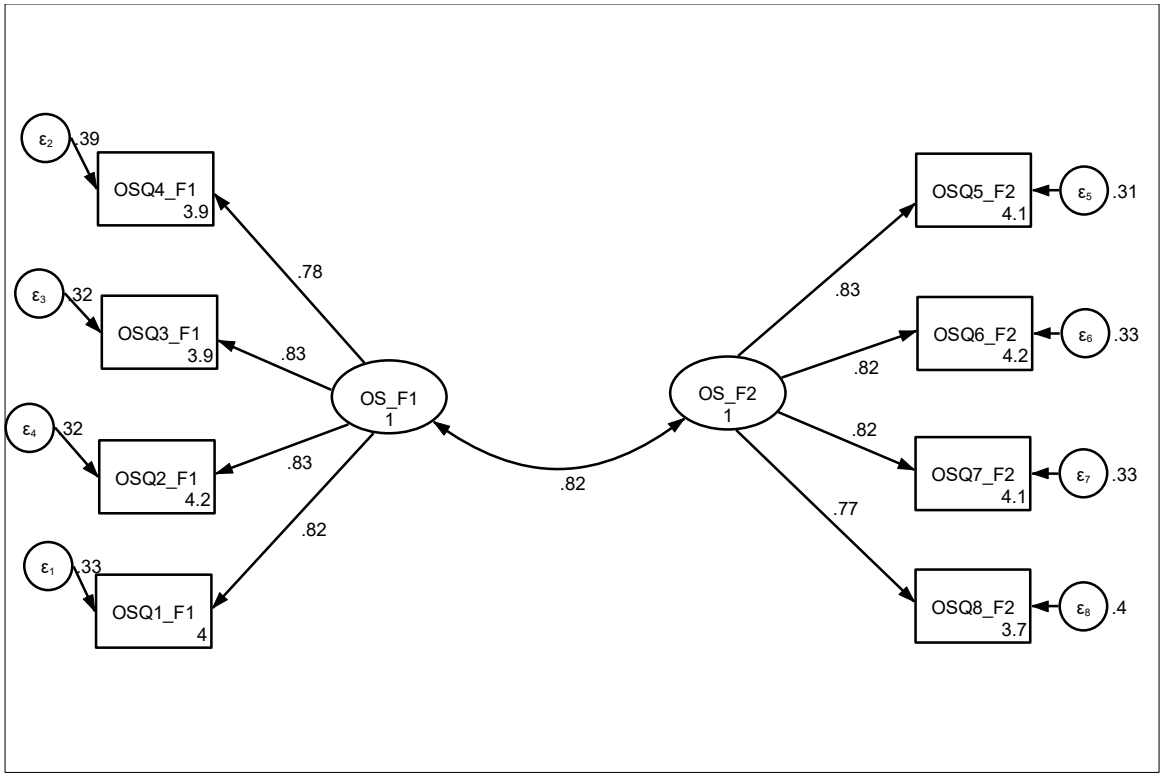
```
      var(IC_F3)|          1          .                          .           .
      var(IC_F2)|          1          .                          .           .
----------------+------------------------------------------------------------------
cov(IC_F1,IC_F3)|   .7400458   .0325384    22.74   0.000     .6762718    .8038199
cov(IC_F1,IC_F2)|   .8402217   .0296473    28.34   0.000      .782114    .8983294
cov(IC_F3,IC_F2)|   .7893127    .033116    23.83   0.000     .7244065    .8542188
------------------------------------------------------------------------------
LR test of model vs. saturated: chi2(24)  =    211.42, Prob > chi2 = 0.0000
```

Goodness of Fit Statistics

```
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
         chi2_ms(24) |    211.421   model vs. saturated
            p > chi2 |      0.000
         chi2_bs(36) |   2221.881   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
               RMSEA |      0.125   Root mean squared error of approximation
 90% CI, lower bound |      0.110
         upper bound |      0.141
              pclose |      0.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                 AIC |  10221.391   Akaike's information criterion
                 BIC |  10347.829   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                 CFI |      0.914   Comparative fit index
                 TLI |      0.871   Tucker-Lewis index
---------------------+--------------------------------------------------------
```

```
Size of residuals     |
                SRMR |      0.061   Standardized root mean squared residual
                  CD |      0.977   Coefficient of determination
------------------------------------------------------------------------------
```

CFA Model Two – 2 Factor OS



CFA Structure

```
------------------------------------------------------------------------------
                |                 OIM
   Standardized |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
----------------+-------------------------------------------------------------
Measurement     |
  OSQ1_F1 <-    |
         OS_F1 |   .8168618   .0182128    44.85   0.000     .7811654    .8525583
         _cons |   3.978646   .1335276    29.80   0.000     3.716937    4.240356
  -------------+-------------------------------------------------------------
  OSQ4_F1 <-    |
         OS_F1 |   .7836615   .0203672    38.48   0.000     .7437425    .8235804
         _cons |   3.949895   .1326713    29.77   0.000     3.689864    4.209925
  -------------+-------------------------------------------------------------
```

```
  OSQ3_F1 <-    |
          OS_F1 |   .8253179   .0176419    46.78   0.000     .7907404    .8598955
          _cons |   3.901847   .1312418    29.73   0.000     3.644618    4.159076
  --------------+------------------------------------------------------------------
  OSQ2_F1 <-    |
          OS_F1 |   .8253642   .0176634    46.73   0.000     .7907445    .8599838
          _cons |   4.237681   .1412726    30.00   0.000     3.960792     4.51457
  --------------+------------------------------------------------------------------
  OSQ5_F2 <-    |
          OS_F2 |   .8296288   .0175281    47.33   0.000     .7952744    .8639833
          _cons |   4.118517   .1377032    29.91   0.000     3.848623     4.38841
  --------------+------------------------------------------------------------------
  OSQ6_F2 <-    |
          OS_F2 |    .817578   .0182717    44.75   0.000     .7817662    .8533898
          _cons |   4.167196   .1391601    29.95   0.000     3.894448    4.439945
  --------------+------------------------------------------------------------------
  OSQ7_F2 <-    |
          OS_F2 |   .8209677   .0182377    45.01   0.000     .7852224     .856713
          _cons |   4.071836   .1363079    29.87   0.000     3.804678    4.338995
  --------------+------------------------------------------------------------------
  OSQ8_F2 <-    |
          OS_F2 |   .7732875   .0211989    36.48   0.000     .7317383    .8148366
          _cons |   3.725794    .126022    29.56   0.000     3.478796    3.972793
 ---------------+------------------------------------------------------------------
  var(e.OSQ1_F1)|   .3327367   .0297547                      .2792433    .3964776
  var(e.OSQ4_F1)|   .3858747    .031922                      .3281176    .4537984
  var(e.OSQ3_F1)|   .3188503   .0291204                       .266592    .3813524
  var(e.OSQ2_F1)|    .318774   .0291575                      .2664561    .3813644
  var(e.OSQ5_F2)|    .311716   .0290837                      .2596214    .3742637
  var(e.OSQ6_F2)|   .3315663    .029877                      .2778879    .3956134
  var(e.OSQ7_F2)|    .326012   .0299452                      .2723004    .3903184
  var(e.OSQ8_F2)|   .4020265   .0327858                        .34264    .4717058
      var(OS_F1)|          1          .                           .           .
      var(OS_F2)|          1          .                           .           .
```

```
---------------+------------------------------------------------------------------
cov(OS_F1,OS_F2)|   .8175462   .0213291    38.33   0.000     .7757419    .8593506
------------------------------------------------------------------------------
LR test of model vs. saturated: chi2(19)  =     64.39, Prob > chi2 = 0.0000
```

Goodness of Fit Statistics

```
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
         chi2_ms(19) |     64.388   model vs. saturated
            p > chi2 |      0.000
         chi2_bs(28) |   2579.894   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
               RMSEA |      0.069   Root mean squared error of approximation
 90% CI, lower bound |      0.051
         upper bound |      0.088
              pclose |      0.042   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                 AIC |   8289.543   Akaike's information criterion
                 BIC |   8394.908   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                 CFI |      0.982   Comparative fit index
                 TLI |      0.974   Tucker-Lewis index
---------------------+--------------------------------------------------------
Size of residuals    |
                SRMR |      0.024   Standardized root mean squared residual
                  CD |      0.973   Coefficient of determination
------------------------------------------------------------------------------
```

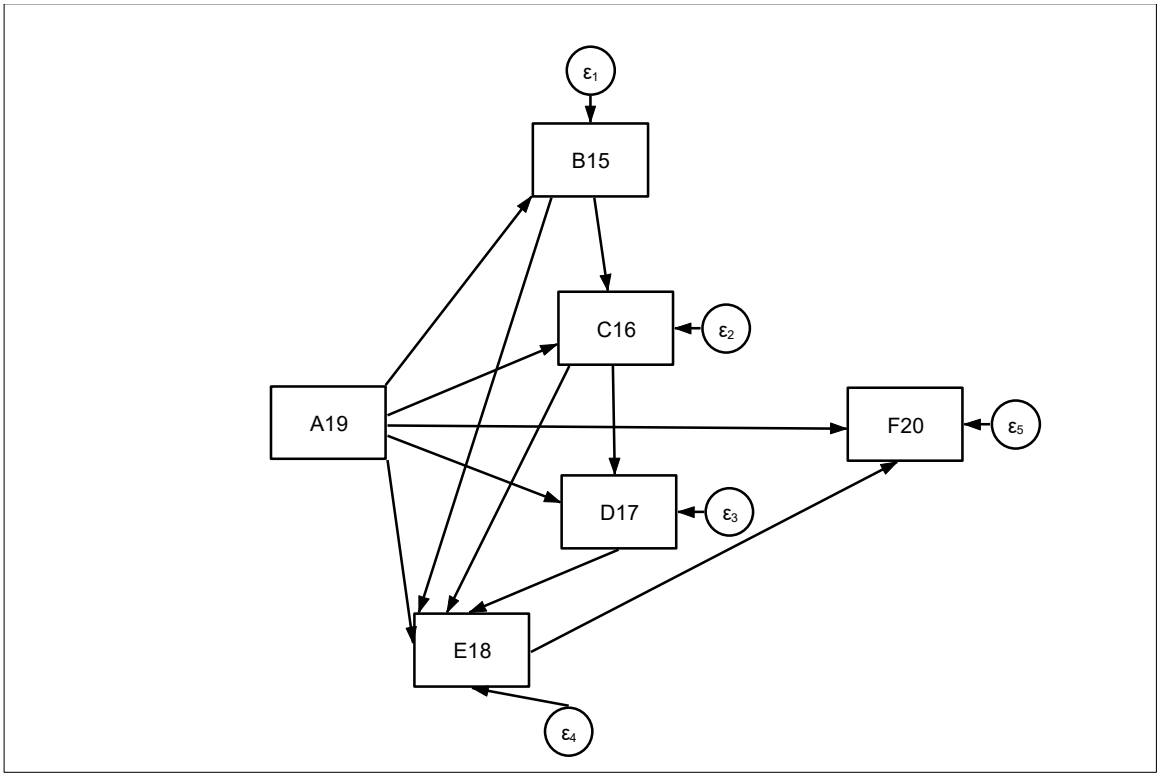
Appendix D

Sequential Equation Modeling for Saudi & Non-Saudi Data Results

SEM Models – SAUDI DATA

Model 1 Original (Conceptual) Model for Saudi Sample

Path Diagram



Model Coefficients

Structural equation model Number of obs = 182

Estimation method = ml

Log likelihood = -3073.7508

Standardized	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Structural						
B15 <-						
A19	.7098274	.0318086	22.32	0.000	.6474837	.7721712
_cons	.5896853	.3198769	1.84	0.065	-.0372619	1.216632
C16 <-						

```
        B15 |   .4552885   .0766887     5.94   0.000     .3049815    .6055955
        A19 |   .2299815   .0795925     2.89   0.004     .0739831      .38598
      _cons |   .8476227   .3583981     2.37   0.018     .1451753     1.55007
  ----------+-----------------------------------------------------------------
  D17 <-    |
        C16 |    .300898   .0592844     5.08   0.000     .1847028    .4170933
        A19 |   .5229215   .0533914     9.79   0.000     .4182762    .6275667
      _cons |   .8337681   .3263644     2.55   0.011     .1941057     1.47343
  ----------+-----------------------------------------------------------------
  E18 <-    |
        B15 |   .0978971   .0787951     1.24   0.214    -.0565384    .2523325
        C16 |   .1138006   .0708263     1.61   0.108    -.0250163    .2526176
        D17 |   .1832644   .0748709     2.45   0.014     .0365201    .3300087
        A19 |   .4322612    .081797     5.28   0.000      .271942    .5925803
      _cons |   1.213551   .3526472     3.44   0.001     .5223751    1.904727
  ----------+-----------------------------------------------------------------
  F20 <-    |
        E18 |   .4692101   .0696742     6.73   0.000     .3326511    .6057691
        A19 |   .2831412   .0718924     3.94   0.000     .1422347    .4240477
      _cons |   .6220771   .3494591     1.78   0.075    -.0628503    1.307004
-------------+-----------------------------------------------------------------
   var(e.B15)|    .496145   .0451573                      .4150835    .5930371
   var(e.C16)|   .5911717   .0527317                      .4963497    .7041085
   var(e.D17)|   .4619391   .0446525                      .3822125    .5582961
   var(e.E18)|   .4749174    .045164                      .3941576    .5722241
   var(e.F20)|   .5160606    .049346                      .4278665    .6224337
------------------------------------------------------------------------------

LR test of model vs. saturated:  chi2(4)   =      5.14, Prob > chi2 = 0.2728.
```

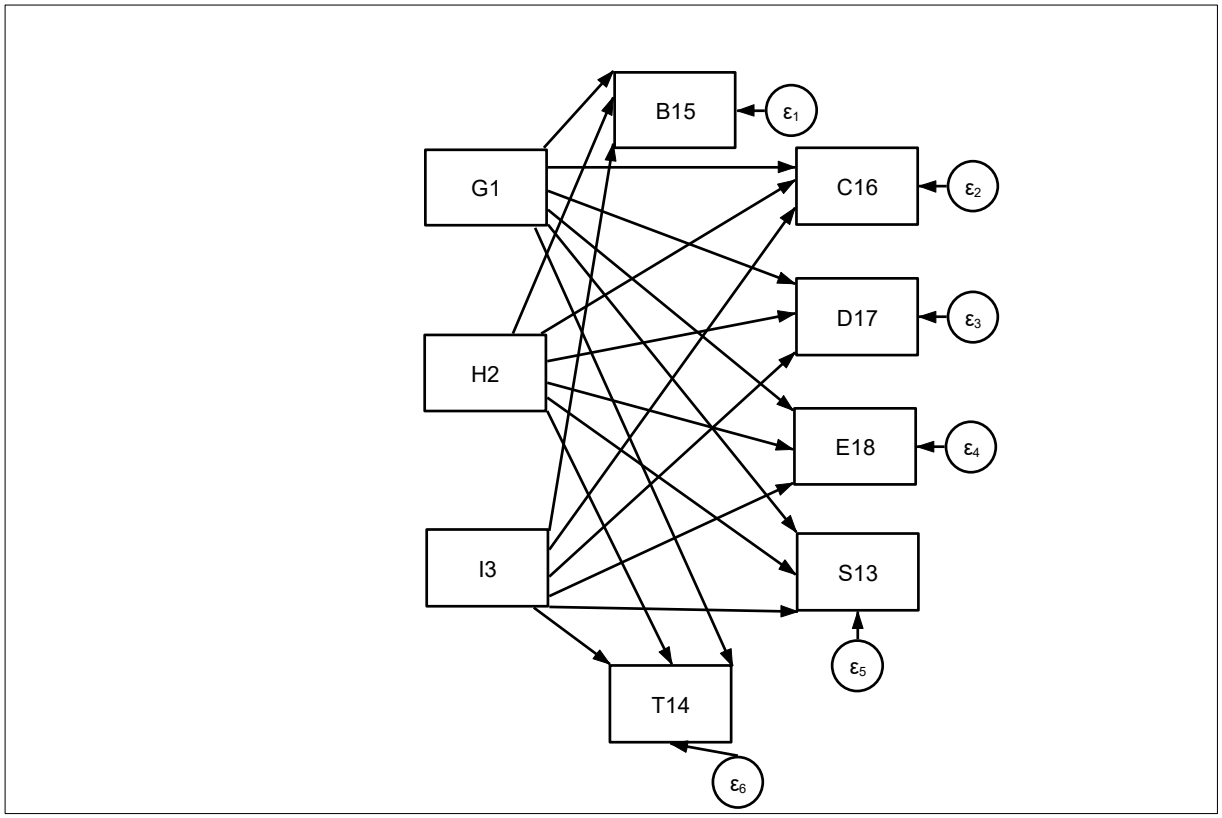
Goodness of fit Statistics

```
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
          chi2_ms(4) |      5.145   model vs. saturated
            p > chi2 |      0.273
```

```
         chi2_bs(15) |    624.643   baseline vs. saturated
            p > chi2 |      0.000
---------------------+-----------------------------------------------------
Population error     |
               RMSEA |      0.040   Root mean squared error of approximation
 90% CI, lower bound |      0.000
         upper bound |      0.125
              pclose |      0.484   Probability RMSEA <= 0.05
---------------------+-----------------------------------------------------
Information criteria |
                 AIC |   6189.502   Akaike's information criterion
                 BIC |   6256.786   Bayesian information criterion
---------------------+-----------------------------------------------------
Baseline comparison  |
                 CFI |      0.998   Comparative fit index
                 TLI |      0.993   Tucker-Lewis index
---------------------+-----------------------------------------------------
Size of residuals    |
                SRMR |      0.022   Standardized root mean squared residual
                  CD |      0.692   Coefficient of determination
```

Model 2 Organisational Culture (OC) for Saudi Sample

Path Diagram



Model Coefficients

Structural equation model Number of obs = 182

Estimation method = ml

Log likelihood = -4092.3094

Standardized	Coef.	OIM Std. Err.	z	P>|z|	[95% Conf.	Interval]
Structural						
B15 <-						
G1	-.0079211	.0658355	-0.12	0.904	-.1369562	.1211141
H2	.4973896	.0757995	6.56	0.000	.3488254	.6459538
I3	.3086513	.0665304	4.64	0.000	.1782541	.4390484
_cons	.8543293	.3215162	2.66	0.008	.2241691	1.484489
C16 < -						

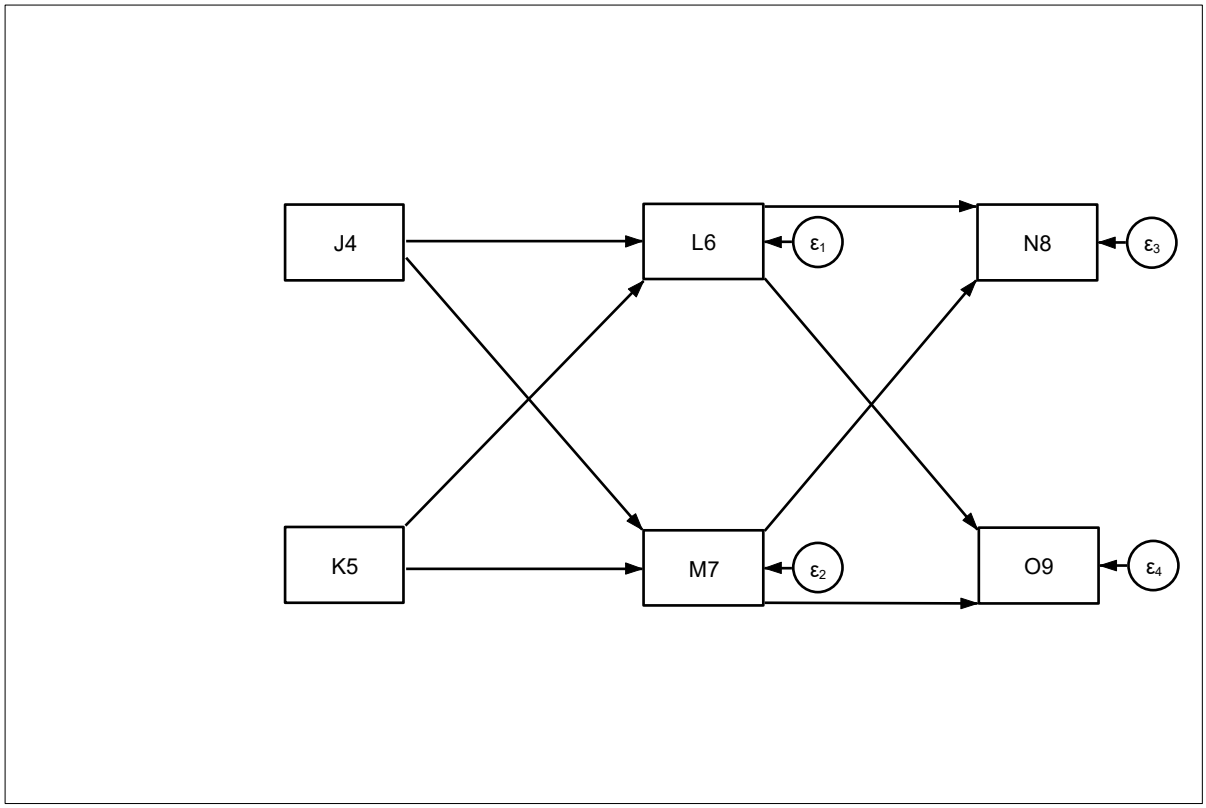
```
         G1 |    .138661   .0797124     1.74   0.082    -.0175723    .2948944
         H2 |   .4223741   .0937542     4.51   0.000     .2386192     .606129
         I3 |   .0657665   .0836557     0.79   0.432    -.0981956    .2297286
      _cons |   1.252228   .3994766     3.13   0.002     .4692682    2.035188
------------+----------------------------------------------------------------
D17 <-      |
         G1 |   .3827609   .0661814     5.78   0.000     .2530478     .512474
         H2 |   .1846493   .0850187     2.17   0.030     .0180156    .3512829
         I3 |    .251299   .0714722     3.52   0.000     .1112161    .3913818
      _cons |    1.04162   .3508183     2.97   0.003     .3540289    1.729211
------------+----------------------------------------------------------------
E18 <-      |
         G1 |   .1989063   .0690709     2.88   0.004     .0635298    .3342829
         H2 |   .2160911   .0848641     2.55   0.011     .0497605    .3824218
         I3 |   .3940423   .0692392     5.69   0.000     .2583359    .5297486
      _cons |   1.612228   .3720419     4.33   0.000     .8830396    2.341417
------------+----------------------------------------------------------------
S13 <-      |
         G1 |   .0974909   .0783885     1.24   0.214    -.0561477    .2511296
         H2 |   .2076438   .0952999     2.18   0.029     .0208594    .3944282
         I3 |   .3679485   .0780932     4.71   0.000     .2148887    .5210082
      _cons |    1.25353   .3941344     3.18   0.001     .4810404    2.026019
------------+----------------------------------------------------------------
T14 <-      |
         G1 |   .0329635   .0805596     0.41   0.682    -.1249304    .1908575
         H2 |   .2698286   .0968474     2.79   0.005     .0800112     .459646
         I3 |   .3237139   .0809004     4.00   0.000     .1651521    .4822758
      _cons |   1.484621   .4089216     3.63   0.000     .6831497    2.286093
-------------+----------------------------------------------------------------
   var(e.B15)|   .4538379   .0423935                      .3779107    .5450199
   var(e.C16)|    .675284    .052211                      .5803287    .7857762
   var(e.D17)|   .5129162   .0461567                      .4299795    .6118501
   var(e.E18)|   .5142329   .0462327                      .4311531    .6133214
   var(e.S13)|   .6480695   .0517389                      .5541987    .7578401
   var(e.T14)|   .6800802   .0522667                      .5849815    .7906388
LR test of model vs. saturated: chi2(15)  =    193.63, Prob > chi2 = 0.0000
```

Goodness of fit Statistics

Fit statistic	Value	Description
Likelihood ratio		
chi2_ms(15)	193.632	model vs. saturated
p > chi2	0.000	
chi2_bs(33)	800.540	baseline vs. saturated
p > chi2	0.000	
Population error		
RMSEA	0.256	Root mean squared error of approximation
90% CI, lower bound	0.224	
upper bound	0.289	
pclose	0.000	Probability RMSEA <= 0.05
Information criteria		
AIC	8244.619	Akaike's information criterion
BIC	8340.739	Bayesian information criterion
Baseline comparison		
CFI	0.767	Comparative fit index
TLI	0.488	Tucker-Lewis index
Size of residuals		
SRMR	0.100	Standardized root mean squared residual
CD	0.843	Coefficient of determination

Model 3 Knowledge Sharing (KS) for Saudi Sample

Path Diagram



Model Coefficients

Structural equation model Number of obs = 182

Estimation method = ml

Log likelihood = -2313.0908

Standardized	Coef.	OIM Std. Err.	z	P>|z|	[95% Conf.	Interval]
Structural						
L6 <-						
J4	.3796614	.0745748	5.09	0.000	.2334975	.5258254
K5	.2413468	.0774098	3.12	0.002	.0896265	.3930672
_cons	1.242046	.3322619	3.74	0.000	.5908242	1.893267
M7 <-						
J4	.4121438	.0744977	5.53	0.000	.266131	.5581565

```
         K5 |   .1878029   .0790205     2.38   0.017     .0329256    .3426801
      _cons |   1.282962   .3362553     3.82   0.000     .6239133     1.94201
  -----------+------------------------------------------------------------------
  N8 <-      |
         L6 |   .3646484   .0782088     4.66   0.000      .211362    .5179348
         M7 |   .2559515   .0811432     3.15   0.002     .0969137    .4149893
      _cons |   2.122157   .3485842     6.09   0.000     1.438944    2.805369
  -----------+------------------------------------------------------------------
  O9 <-      |
         L6 |   .3175075   .0804924     3.94   0.000     .1597453    .4752698
         M7 |   .2848507   .0813626     3.50   0.000     .1253829    .4443185
      _cons |    2.64795   .3709762     7.14   0.000      1.92085     3.37505
-------------+------------------------------------------------------------------
    var(e.L6)|   .6810461   .0522769                      .5859203    .7916158
    var(e.M7)|   .6964046   .0523906                      .6009325    .8070447
    var(e.N8)|    .743576   .0507338                      .6505016    .8499676
    var(e.O9)|   .7618989   .0497009                      .6704571    .8658122
------------------------------------------------------------------------------
LR test of model vs. saturated: chi2(6)   =    115.19, Prob > chi2 = 0.0000
```

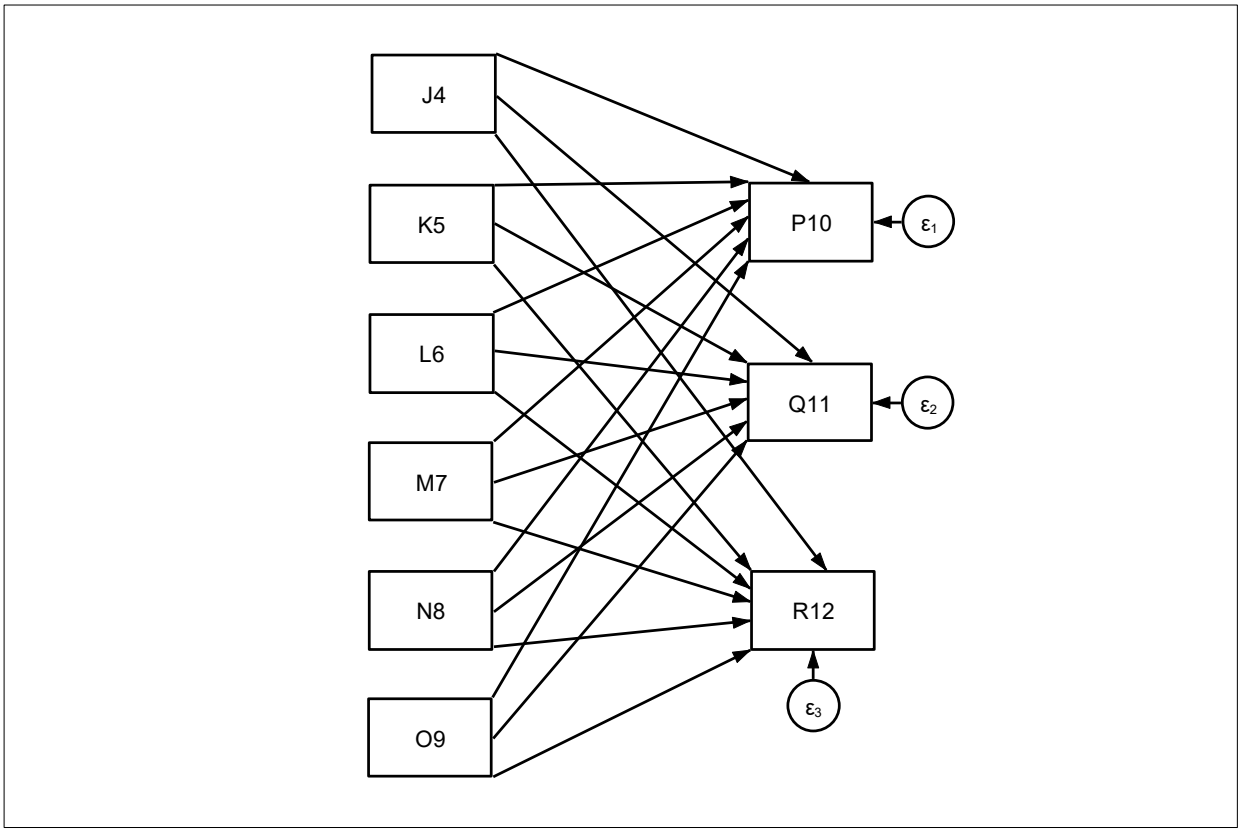
Goodness of fit Statistics

```
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
          chi2_ms(6) |    115.191   model vs. saturated
            p > chi2 |      0.000
         chi2_bs(14) |    374.399   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
               RMSEA |      0.316   Root mean squared error of approximation
 90% CI, lower bound |      0.267
         upper bound |      0.368
              pclose |      0.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
```

```
Information criteria |
                 AIC |   4658.182   Akaike's information criterion
                 BIC |   4709.446   Bayesian information criterion
---------------------+-----------------------------------------------------
Baseline comparison  |
                 CFI |      0.697   Comparative fit index
                 TLI |      0.293   Tucker-Lewis index
---------------------+-----------------------------------------------------
Size of residuals    |
                SRMR |      0.132   Standardized root mean squared residual
                  CD |      0.475   Coefficient of determination
```

Model 4 Knowledge Environment (KE) for Saudi Sample

Path Diagram



Model Coefficients

```
Structural equation model                       Number of obs     =        182

Estimation method  = ml

Log likelihood     = -3365.9873

------------------------------------------------------------------------------
```

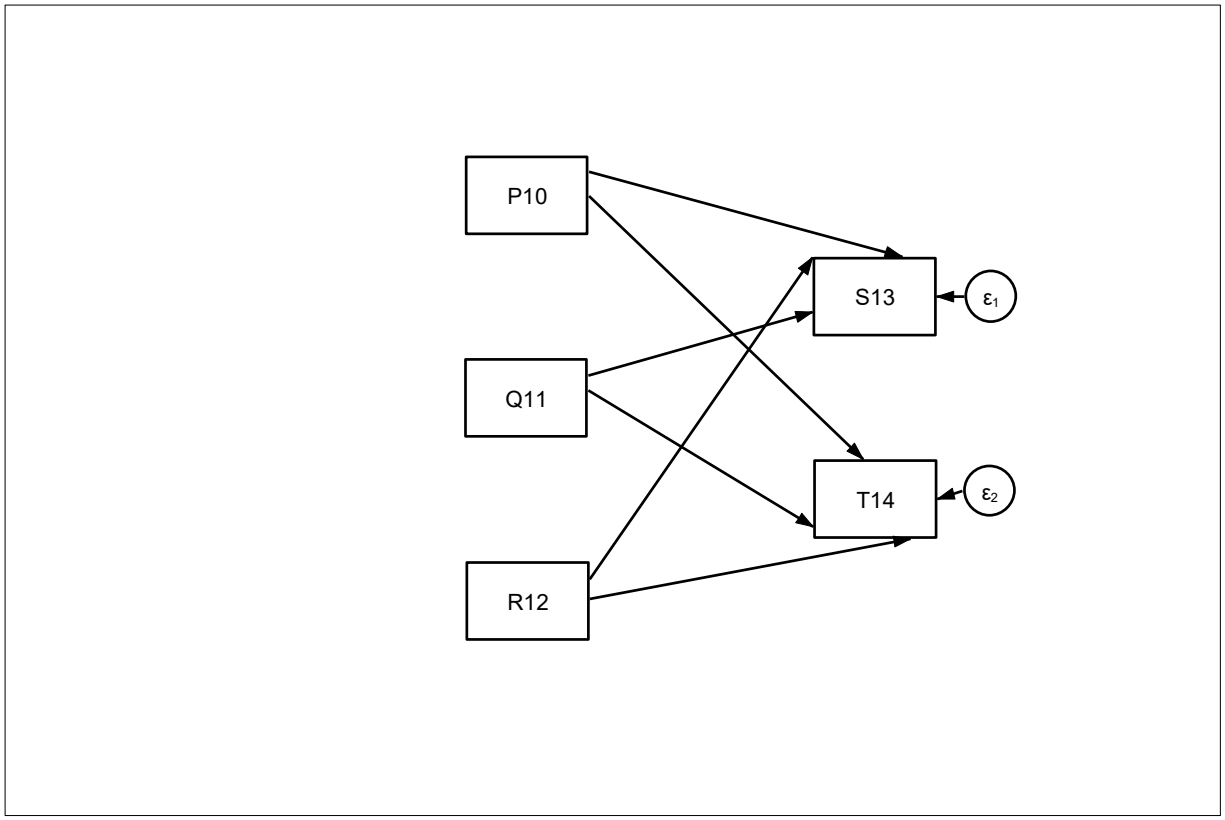
```
             |                 OIM
Standardized |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+------------------------------------------------------------------
Structural   |
  P10 <-     |
          J4 |   .2402454    .082181     2.92   0.003     .0791737    .4013171
          K5 |  -.0344862   .0801404    -0.43   0.667    -.1915585    .1225861
          L6 |   .0982371   .0820956     1.20   0.231    -.0626673    .2591414
          M7 |  -.0562377   .0800922    -0.70   0.483    -.2132155    .1007401
          N8 |   .0583862   .0807471     0.72   0.470    -.0998753    .2166476
          O9 |   .4064957   .0792424     5.13   0.000     .2511834    .5618081
       _cons |   1.529397   .3867487     3.95   0.000     .7713834     2.28741
  -----------+------------------------------------------------------------------
  Q11 <-     |
          J4 |   .2061397   .0862476     2.39   0.017     .0370975    .3751819
          K5 |   .0610158   .0836293     0.73   0.466    -.1028947    .2249262
          L6 |   .0995043   .0857352     1.16   0.246    -.0685335    .2675422
          M7 |   .0993014    .083452     1.19   0.234    -.0642616    .2628644
          N8 |   .1210712   .0840013     1.44   0.149    -.0435682    .2857106
          O9 |   .1397881   .0869887     1.61   0.108    -.0307065    .3102828
       _cons |   1.571587   .4029204     3.90   0.000     .7818772    2.361296
  -----------+------------------------------------------------------------------
  R12 <-     |
          J4 |    .117998   .0811594     1.45   0.146    -.0410714    .2770675
          K5 |    .177977   .0771744     2.31   0.021      .026718    .3292359
          L6 |   .0234785   .0801515     0.29   0.770    -.1336154    .1805725
          M7 |   .1006437   .0777697     1.29   0.196    -.0517822    .2530696
          N8 |   .0459518   .0786314     0.58   0.559    -.1081628    .2000665
          O9 |   .3324665   .0786725     4.23   0.000     .1782712    .4866617
       _cons |   1.362052   .3735592     3.65   0.000      .629889    2.094214
-------------+------------------------------------------------------------------
   var(e.P10)|   .6264553   .0511872                      .5337513    .7352604
   var(e.Q11)|   .6834459   .0523006                      .5882555    .7940398
   var(e.R12)|   .5935116   .0500738                      .5030539    .7002351
------------------------------------------------------------------------------
LR test of model vs. saturated: chi2(3)   =     98.63, Prob > chi2 = 0.0000
```

Goodness of fit Statistics

Fit statistic	Value	Description
Likelihood ratio		
chi2_ms(3)	98.626	model vs. saturated
p > chi2	0.000	
chi2_bs(21)	347.964	baseline vs. saturated
p > chi2	0.000	
Population error		
RMSEA	0.418	Root mean squared error of approximation
90% CI, lower bound	0.350	
upper bound	0.491	
pclose	0.000	Probability RMSEA <= 0.05
Information criteria		
AIC	6779.975	Akaike's information criterion
BIC	6856.871	Bayesian information criterion
Baseline comparison		
CFI	0.708	Comparative fit index
TLI	-1.047	Tucker-Lewis index
Size of residuals		
SRMR	0.072	Standardized root mean squared residual
CD	0.648	Coefficient of determination

Model 5 Intellectual Capital (IC) and Organisational Success (OS) for Saudi Sample

Path Diagram



Model Coefficients

Structural equation model Number of obs = 182

Estimation method = ml

Log likelihood = -1992.4281

Standardized	Coef.	OIM Std. Err.	z	P>|z|	[95% Conf.	Interval]
Structural						
S13 <-						
P10	.1154945	.0736194	1.57	0.117	-.0287969	.259786
Q11	.2361968	.0789839	2.99	0.003	.0813912	.3910023
R12	.3806028	.0780564	4.88	0.000	.2276151	.5335905
_cons	.9639111	.3511686	2.74	0.006	.2756333	1.652189
T14 <-						
P10	.0498203	.0765978	0.65	0.515	-.1003087	.1999492

```
         Q11 |   .3734005   .0794958     4.70   0.000     .2175915    .5292094
         R12 |   .2594451   .0829406     3.13   0.002     .0968845    .4220058
       _cons |   1.207412    .370438     3.26   0.001     .4813673    1.933457
-------------+------------------------------------------------------------------
   var(e.S13)|   .5794592   .0495063                      .4901174    .6850867
   var(e.T14)|   .6221951   .0510612                      .5297509    .7307714
------------------------------------------------------------------------------
LR test of model vs. saturated: chi2(1)   =     65.98, Prob > chi2 = 0.0000
```

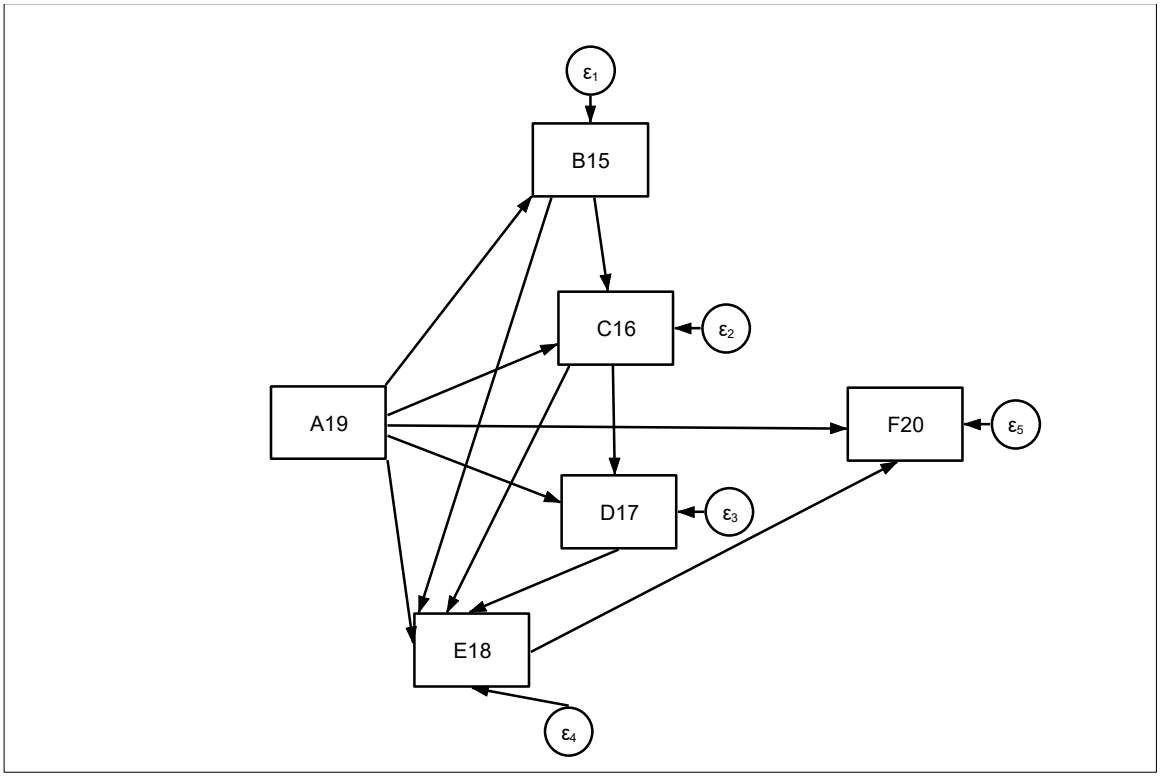
Goodness of fit Statistics

```
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
          chi2_ms(1) |     65.977   model vs. saturated
            p > chi2 |      0.000
          chi2_bs(7) |    251.646   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
               RMSEA |      0.598   Root mean squared error of approximation
 90% CI, lower bound |      0.480
         upper bound |      0.724
              pclose |      0.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                 AIC |   4004.856   Akaike's information criterion
                 BIC |   4036.896   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                 CFI |      0.734   Comparative fit index
                 TLI |     -0.859   Tucker-Lewis index
---------------------+--------------------------------------------------------
Size of residuals    |
                SRMR |      0.085   Standardized root mean squared residual
                  CD |      0.574   Coefficient of determination
```

SEM Models – NON-SAUDI DATA

Model 1 Original (Conceptual) Model for Non-Saudi Sample

Path Diagram



Model Coefficients

Structural equation model Number of obs = 318

Estimation method = ml

Log likelihood = -5285.7815

Standardized	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Structural						
B15 <-						
A19	.7189808	.023327	30.82	0.000	.6732608	.7647009
_cons	.6283037	.2604954	2.41	0.016	.1177421	1.138865
C16 <-						
B15	.444516	.060228	7.38	0.000	.3264712	.5625607
A19	.2172123	.062431	3.48	0.001	.0948497	.3395748

```
       _cons |   .4775163   .2894416     1.65   0.099    -.0897788    1.044811
  -----------+------------------------------------------------------------------
  D17 <-     |
         C16 |   .3730018   .0467632     7.98   0.000     .2813476    .4646561
         A19 |   .4030366   .0452257     8.91   0.000      .314396    .4916773
       _cons |   1.398469   .2973761     4.70   0.000     .8156227    1.981316
  -----------+------------------------------------------------------------------
  E18 <-     |
         B15 |   .1514343   .0526665     2.88   0.004     .0482098    .2546587
         C16 |   .1266776   .0439979     2.88   0.004     .0404434    .2129119
         D17 |   .2897627   .0455146     6.37   0.000     .2005557    .3789697
         A19 |   .3901982   .0471637     8.27   0.000     .2977591    .4826373
       _cons |   .1188027   .2178783     0.55   0.586     -.308231    .5458363
  -----------+------------------------------------------------------------------
  F20 <-     |
         E18 |   .5761288   .0550753    10.46   0.000     .4681833    .6840743
         A19 |   .1458179   .0597026     2.44   0.015     .0288028    .2628329
       _cons |   1.183839    .288812     4.10   0.000     .6177782    1.749901
-------------+------------------------------------------------------------------
   var(e.B15)|   .4830666   .0335433                      .4216004    .5534941
   var(e.C16)|    .616383   .0404336                      .5420177    .7009513
   var(e.D17)|   .5370299   .0379378                      .4675914    .6167803
   var(e.E18)|   .3389431     .02706                      .2898478    .3963544
   var(e.F20)|   .5221618   .0380369                      .4526883    .6022973
------------------------------------------------------------------------------
LR test of model vs. saturated: chi2(4)   =     27.25, Prob > chi2 = 0.0000
```

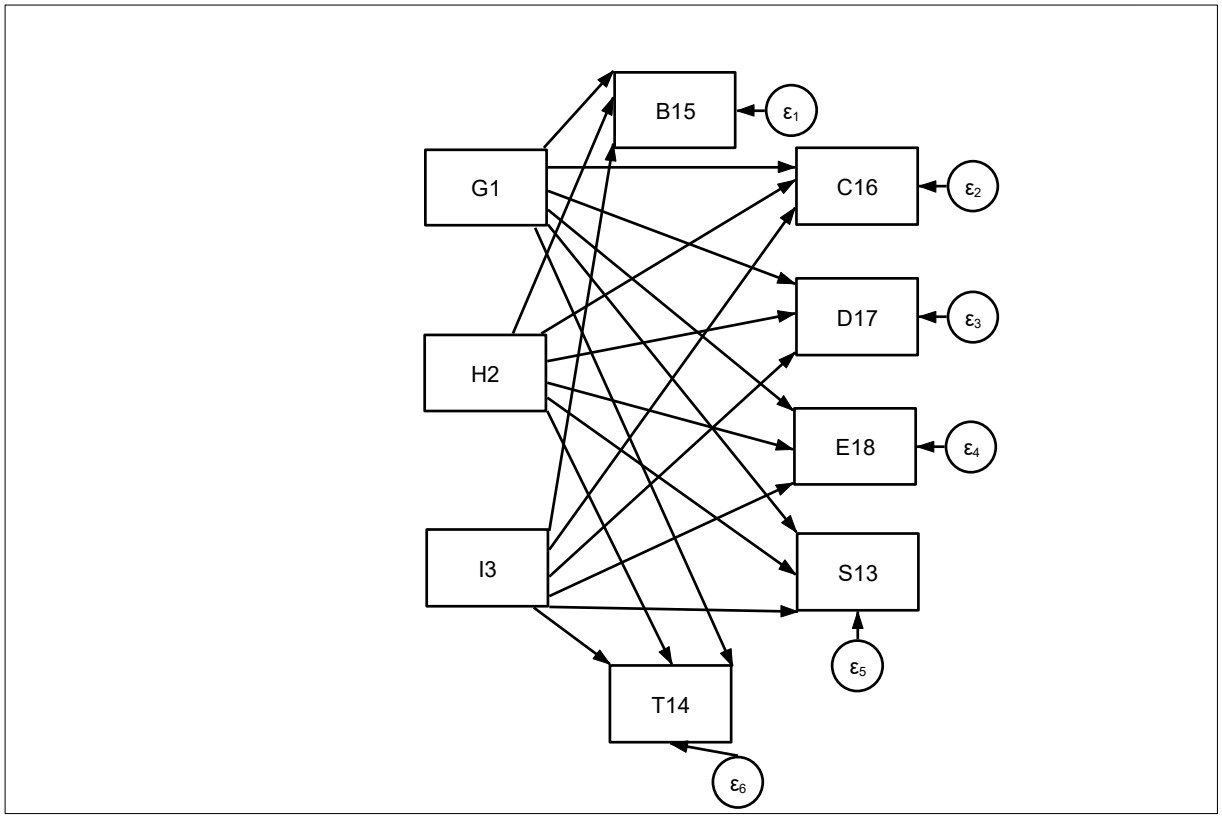
Goodness of fit Statistics

```
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
          chi2_ms(4) |     27.245   model vs. saturated
            p > chi2 |      0.000
         chi2_bs(15) |   1165.042   baseline vs. saturated
            p > chi2 |      0.000
```

Population error		
RMSEA	0.135	Root mean squared error of approximation
90% CI, lower bound	0.090	
upper bound	0.185	
pclose	0.002	Probability RMSEA <= 0.05
Information criteria		
AIC	10613.563	Akaike's information criterion
BIC	10692.566	Bayesian information criterion
Baseline comparison		
CFI	0.980	Comparative fit index
TLI	0.924	Tucker-Lewis index
Size of residuals		
SRMR	0.036	Standardized root mean squared residual
CD	0.660	Coefficient of determination

Model 2 Organisational Culture (OC) for Non-Saudi Sample

Path Diagram



Model Coefficients

Structural equation model Number of obs = 318

Estimation method = ml

Log likelihood = -7108.1963

Standardized	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Structural						
B15 <-						
G1	.1075794	.0488524	2.20	0.028	.0118305	.2033284
H2	.4548837	.0508073	8.95	0.000	.3553033	.5544641
I3	.2820027	.0464506	6.07	0.000	.1909612	.3730442
_cons	.6585577	.2549597	2.58	0.010	.1588458	1.15827
C16 <-						

```
        G1 |   .0409419   .0591605     0.69   0.489    -.0750106    .1568944
        H2 |   .4893311   .0601788     8.13   0.000     .3713828    .6072794
        I3 |   .0909611   .0576538     1.58   0.115    -.0220382    .2039605
     _cons |    .806512    .306134     2.63   0.008     .2065004    1.406524
-----------+------------------------------------------------------------------
D17 <-     |
        G1 |   .1441063    .056953     2.53   0.011     .0324805     .255732
        H2 |   .2680456   .0620733     4.32   0.000     .1463841     .389707
        I3 |   .3034289   .0539436     5.62   0.000     .1977015    .4091564
     _cons |   1.686009   .3248483     5.19   0.000     1.049318      2.3227
-----------+------------------------------------------------------------------
E18 <-     |
        G1 |   .1488148   .0472693     3.15   0.002     .0561686     .241461
        H2 |     .47721   .0490376     9.73   0.000     .3810982    .5733218
        I3 |   .2404279   .0455323     5.28   0.000     .1511863    .3296695
     _cons |   .8266051   .2527393     3.27   0.001     .3312451    1.321965
-----------+------------------------------------------------------------------
S13 <-     |
        G1 |   .1767798   .0577482     3.06   0.002     .0635955    .2899642
        H2 |   .3108872   .0626633     4.96   0.000     .1880693    .4337051
        I3 |   .2040408   .0561508     3.63   0.000     .0939873    .3140943
     _cons |   1.183985    .314917     3.76   0.000     .5667589    1.801211
-----------+------------------------------------------------------------------
T14 <-     |
        G1 |   .1400777    .063094     2.22   0.026     .0164157    .2637397
        H2 |   .2554269   .0688353     3.71   0.000     .1205123    .3903416
        I3 |   .1638338   .0614385     2.67   0.008     .0434165    .2842511
     _cons |   1.896417   .3556949     5.33   0.000     1.199268    2.593566
-------------+----------------------------------------------------------------
  var(e.B15)|   .4594504   .0323633                      .4002034    .5274685
  var(e.C16)|    .668942   .0394332                      .5959519    .7508715
  var(e.D17)|   .6294335   .0387885                      .5578212    .7102392
  var(e.E18)|   .4334925   .0309802                      .3768333    .4986708
  var(e.S13)|    .652769   .0392172                      .5802576    .7343416
  var(e.T14)|   .7724427   .0389044                      .6998341    .8525845
------------------------------------------------------------------------------
```

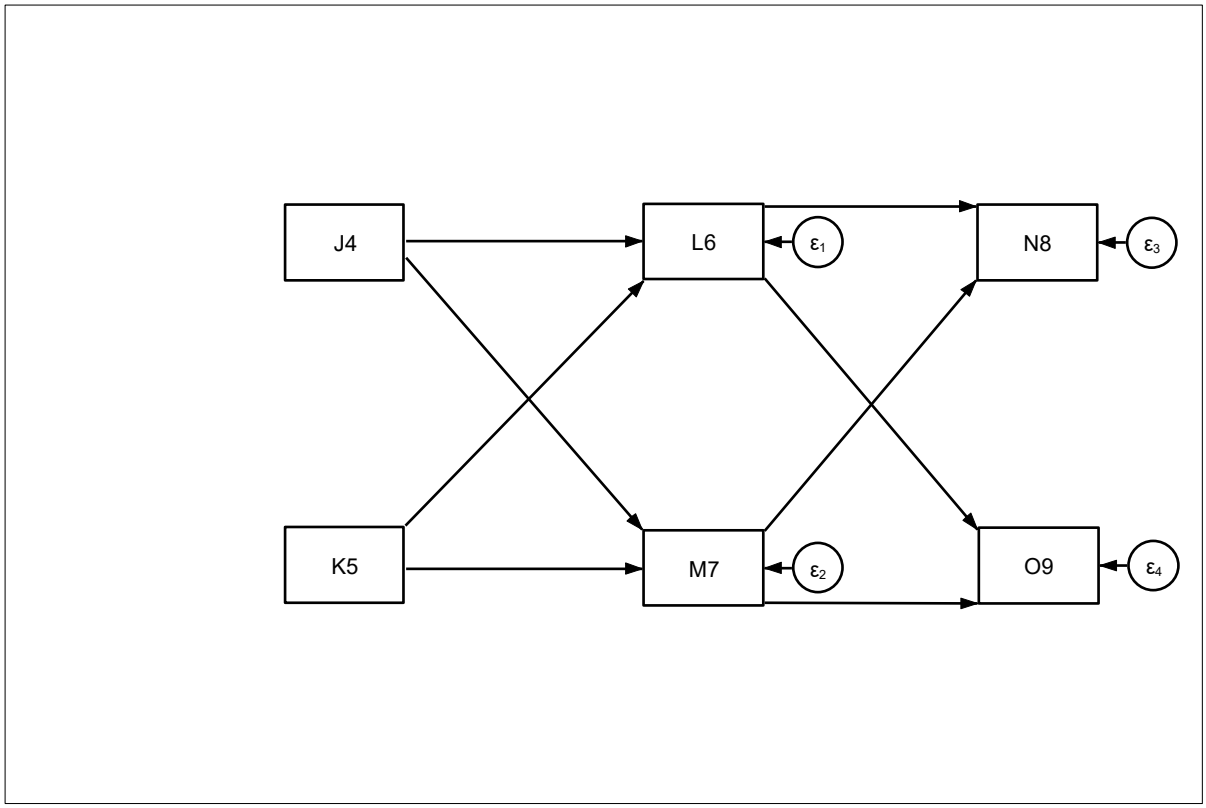
```
LR test of model vs. saturated: chi2(15)  =    452.19, Prob > chi2 = 0.0000
```

Goodness of fit Statistics

```
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
         chi2_ms(15) |    452.192   model vs. saturated
            p > chi2 |      0.000
         chi2_bs(33) |   1458.130   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
               RMSEA |      0.303   Root mean squared error of approximation
 90% CI, lower bound |      0.279
         upper bound |      0.327
              pclose |      0.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                 AIC |  14276.393   Akaike's information criterion
                 BIC |  14389.254   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                 CFI |      0.693   Comparative fit index
                 TLI |      0.325   Tucker-Lewis index
---------------------+--------------------------------------------------------
Size of residuals    |
                SRMR |      0.124   Standardized root mean squared residual
                  CD |      0.820   Coefficient of determination
------------------------------------------------------------------------------
```

Model 3 Knowledge Sharing (KS) for Non-Saudi Sample

Path Diagram



Model Coefficients

Structural equation model Number of obs = 318

Estimation method = ml

Log likelihood = -3988.5653

Standardized	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
	OIM					
Structural						
L6 <-						
J4	.2784902	.0608366	4.58	0.000	.1592526	.3977277
K5	.2533212	.0612046	4.14	0.000	.1333623	.37328
_cons	1.473002	.2916734	5.05	0.000	.9013327	2.044671
M7 <-						
J4	.4171608	.0518816	8.04	0.000	.3154747	.5188468
K5	.2746087	.0541982	5.07	0.000	.1683822	.3808351

```
       _cons |    .470424   .2385051     1.97   0.049     .0029626    .9378855
  -----------+------------------------------------------------------------------
  N8 <-      |
          L6 |   .1721515   .0707459     2.43   0.015      .033492     .310811
          M7 |    .412277   .0650944     6.33   0.000     .2846944    .5398596
       _cons |   2.851654    .275275    10.36   0.000     2.312125    3.391183
  -----------+------------------------------------------------------------------
  O9 <-      |
          L6 |   .0512871   .0684491     0.75   0.454    -.0828706    .1854448
          M7 |   .5151036   .0581577     8.86   0.000     .4011166    .6290906
       _cons |    2.70836   .2645176    10.24   0.000     2.189915    3.226805
-------------+------------------------------------------------------------------
    var(e.L6)|   .7703293   .0389545                      .6976415    .8505905
    var(e.M7)|   .6077651   .0382756                      .5371915    .6876103
    var(e.N8)|   .7579104   .0393705                      .6845438    .8391402
    var(e.O9)|   .7162255   .0453249                      .6326787     .810805
------------------------------------------------------------------------------
LR test of model vs. saturated: chi2(6)   =    281.45, Prob > chi2 = 0.0000
```

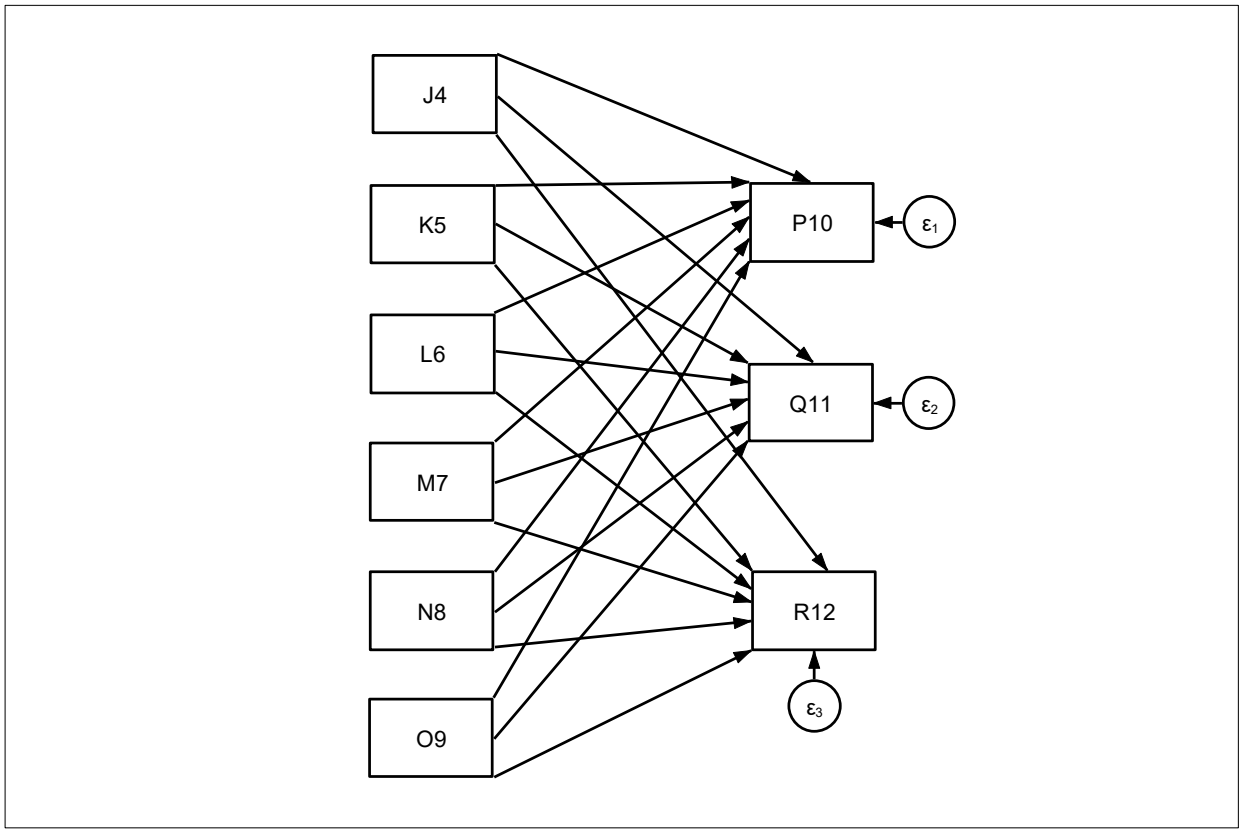
Goodness of fit Statistics

```
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
          chi2_ms(6) |    281.446   model vs. saturated
            p > chi2 |      0.000
         chi2_bs(14) |    742.147   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
               RMSEA |      0.380   Root mean squared error of approximation
 90% CI, lower bound |      0.343
         upper bound |      0.418
              pclose |      0.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
```

```
                AIC |   8009.131   Akaike's information criterion
                BIC |   8069.323   Bayesian information criterion
--------------------+----------------------------------------------------
Baseline comparison |
                CFI |      0.622   Comparative fit index
                TLI |      0.117   Tucker-Lewis index
--------------------+----------------------------------------------------
Size of residuals   |
               SRMR |      0.157   Standardized root mean squared residual
                 CD |      0.486   Coefficient of determination
------------------------------------------------------------------------------
```

Model 4 Knowledge Environment (KE) for Non-Saudi Sample

Path Diagram



Model Coefficients

```
Structural equation model                       Number of obs     =        318
Estimation method  = ml
Log likelihood     = -5719.3613

------------------------------------------------------------------------------
```

	OIM				
Standardized	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]
Structural					
P10 <-					
J4	.1918014	.0547054	3.51	0.000	.0845809 .299022
K5	.1805684	.0540898	3.34	0.001	.0745543 .2865825
L6	.0388633	.0561427	0.69	0.489	-.0711743 .1489009
M7	.0382528	.0644478	0.59	0.553	-.0880626 .1645681
N8	.0802083	.0515575	1.56	0.120	-.0208427 .1812592
O9	.3583844	.0526957	6.80	0.000	.2551028 .4616661
_cons	.6336261	.2530298	2.50	0.012	.1376969 1.129555
Q11 <-					
J4	.2987475	.056799	5.26	0.000	.1874235 .4100715
K5	-.0159775	.0577296	-0.28	0.782	-.1291254 .0971705
L6	.0902748	.0591899	1.53	0.127	-.0257354 .2062849
M7	.0730024	.0680227	1.07	0.283	-.0603196 .2063244
N8	.1996615	.0538042	3.71	0.000	.0942072 .3051157
O9	.2067677	.0572361	3.61	0.000	.0945869 .3189484
_cons	.6128645	.265876	2.31	0.021	.091757 1.133972
R12 <-					
J4	.1878306	.0588402	3.19	0.001	.0725059 .3031553
K5	.1756494	.0581854	3.02	0.003	.0616082 .2896907
L6	.116328	.0601546	1.93	0.053	-.0015729 .2342289
M7	.1033373	.0691604	1.49	0.135	-.0322145 .2388891
N8	.1777447	.0549347	3.24	0.001	.0700746 .2854147
O9	.0968652	.0588955	1.64	0.100	-.0185678 .2122982
_cons	1.070158	.2831753	3.78	0.000	.5151445 1.625171
var(e.P10)	.4799646	.0333928			.4187821 .5500855
var(e.Q11)	.5356505	.0358717			.469762 .6107805
var(e.R12)	.5551095	.0366174			.4877865 .6317242

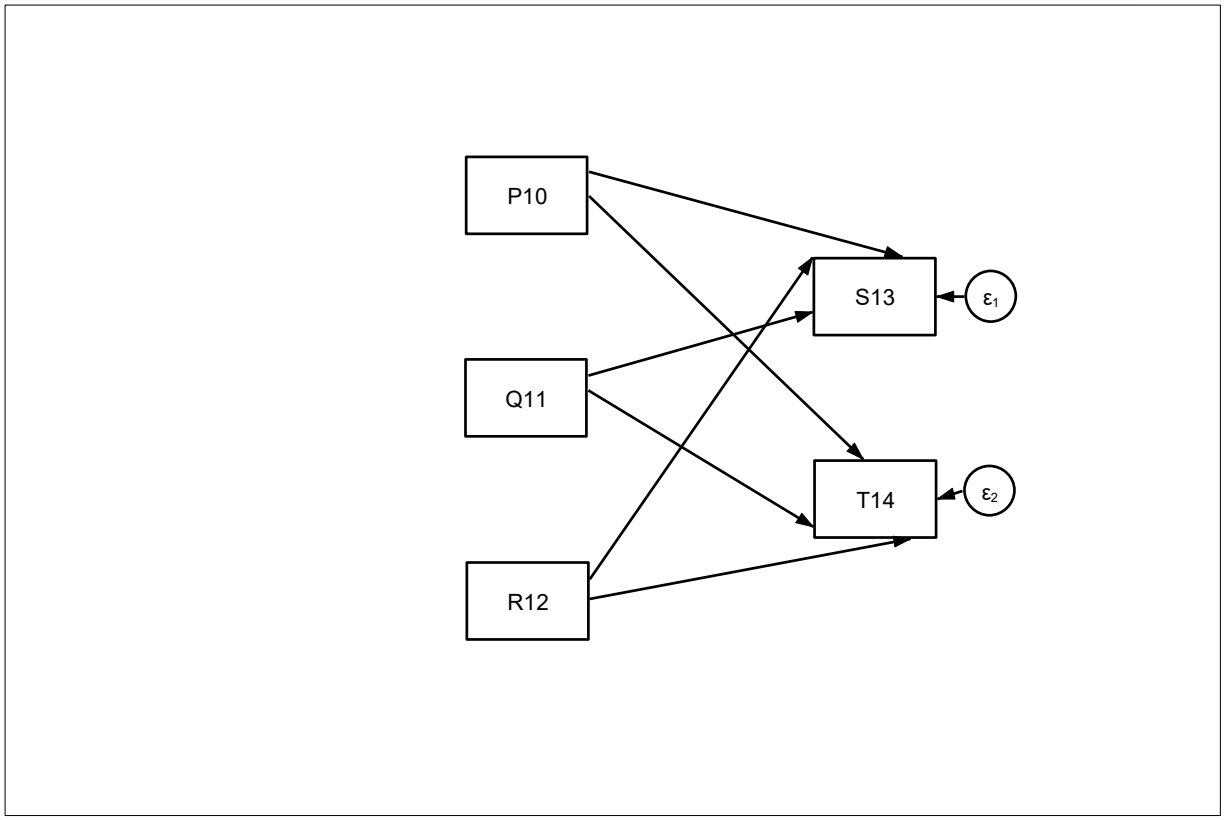
LR test of model vs. saturated: chi2(3) = 132.58, Prob > chi2 = 0.0000

Goodness of fit Statistics

Fit statistic	Value	Description
Likelihood ratio		
chi2_ms(3)	132.582	model vs. saturated
p > chi2	0.000	
chi2_bs(21)	751.698	baseline vs. saturated
p > chi2	0.000	
Population error		
RMSEA	0.369	Root mean squared error of approximation
90% CI, lower bound	0.316	
upper bound	0.423	
pclose	0.000	Probability RMSEA <= 0.05
Information criteria		
AIC	11486.723	Akaike's information criterion
BIC	11577.012	Bayesian information criterion
Baseline comparison		
CFI	0.823	Comparative fit index
TLI	-0.241	Tucker-Lewis index
Size of residuals		
SRMR	0.053	Standardized root mean squared residual
CD	0.747	Coefficient of determination

Model 5 Intellectual Capital (IC) and Organisational Success (OS) for Non-Sample

Path Diagram



Model Coefficients

Structural equation model Number of obs = 318

Estimation method = ml

Log likelihood = -3421.8333

Standardized	Coef.	OIM Std. Err.	z	P>|z|	[95% Conf.	Interval]
Structural						
S13 <-						
P10	.1920396	.0552278	3.48	0.001	.0837951	.3002841
Q11	.1487434	.0593152	2.51	0.012	.0324877	.2649991
R12	.4537333	.0531801	8.53	0.000	.3495021	.5579644
_cons	.9853582	.2436875	4.04	0.000	.5077395	1.462977
T14 <-						
P10	.1238261	.0644545	1.92	0.055	-.0025025	.2501547

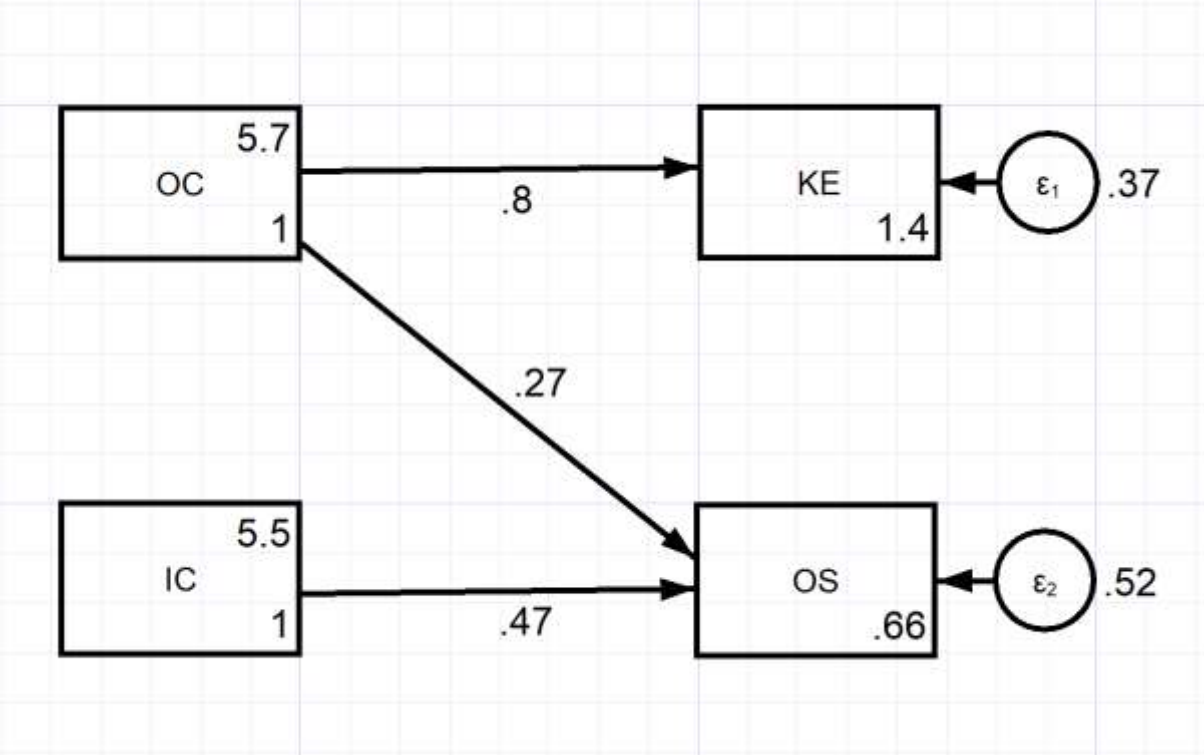
```
         Q11 |   .2434378   .0679885     3.58   0.000     .1101828    .3766928
         R12 |   .2834257   .0641592     4.42   0.000      .157676    .4091755
       _cons |   1.740214   .2986791     5.83   0.000     1.154814    2.325615
-------------+----------------------------------------------------------------
   var(e.S13)|   .4959025   .0341513                      .433288    .5675653
   var(e.T14)|   .6667219   .0394077                     .5937902    .7486114
------------------------------------------------------------------------------
LR test of model vs. saturated: chi2(1)   =    112.69, Prob > chi2 = 0.0000
```

Goodness of fit Statistics

```
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
          chi2_ms(1) |    112.686   model vs. saturated
            p > chi2 |      0.000
          chi2_bs(7) |    464.635   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
               RMSEA |      0.593   Root mean squared error of approximation
 90% CI, lower bound |      0.503
         upper bound |      0.688
              pclose |      0.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                 AIC |   6863.667   Akaike's information criterion
                 BIC |   6901.287   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                 CFI |      0.756   Comparative fit index
                 TLI |     -0.708   Tucker-Lewis index
---------------------+--------------------------------------------------------
Size of residuals    |
                SRMR |      0.081   Standardized root mean squared residual
                  CD |      0.604   Coefficient of determination
```

SAUDI MODEL

SEM SUMMARY DIAGRAM FOR THE MAIN FACTOR/VARIABLES



Summary Results

```
Structural equation model                       Number of obs     =        181
Estimation method  = ml
Log likelihood     = -2344.1764

------------------------------------------------------------------------------
             |                 OIM
Standardized |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
Structural   |
  KE <-      |                          z value
             |                            ↓
          OC |   .7968652   .0224137    35.55   0.000     .7529353    .8407952
       _cons |   1.417773   .3113545     4.55   0.000     .8075298    2.028017
  -----------+----------------------------------------------------------------
  -----------+----------------------------------------------------------------
  OS <-      |
```

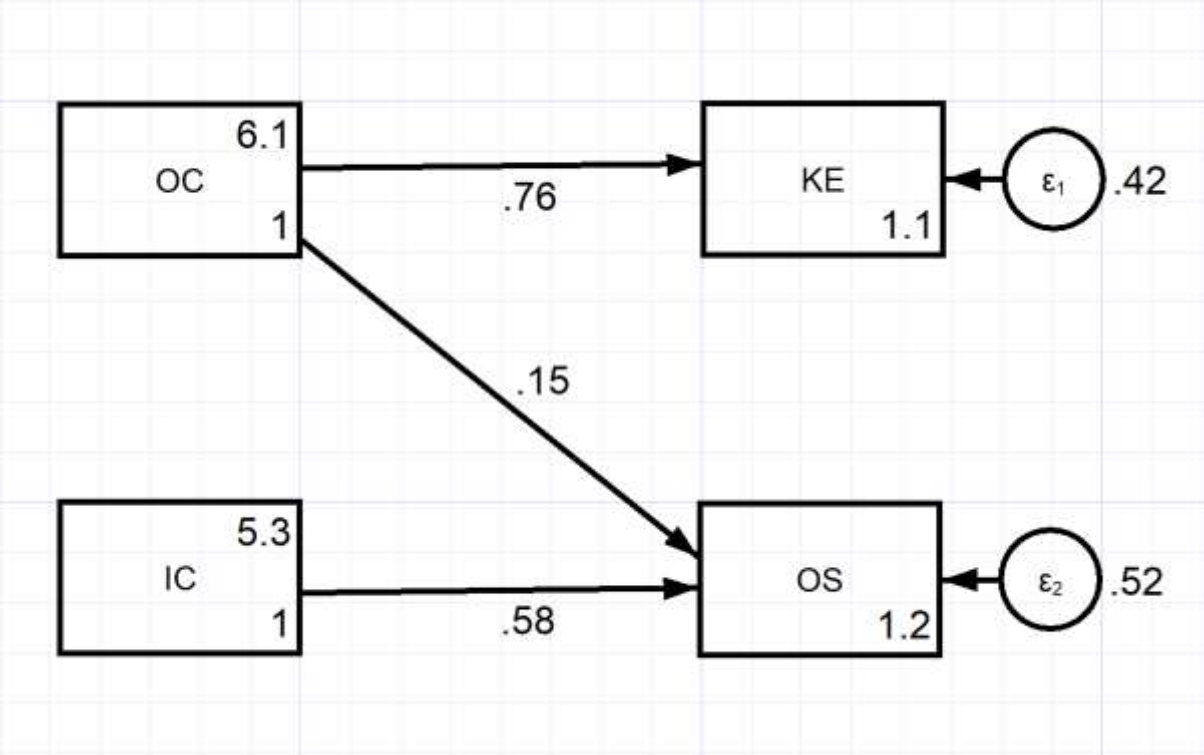
```
          OC |   .2745335    .072229     3.80   0.000     .1329672    .4160997
          IC |   .4718665   .0684047     6.90   0.000     .3377958    .6059372
       _cons |   .6583633   .3575332     1.84   0.066    -.0423889    1.359115
-------------+------------------------------------------------------------------
    var(e.KE)|   .3650058   .0357213                      .3012984    .4421836
    var(e.OS)|   .5237631   .0469009                      .4394538    .6242471
------------------------------------------------------------------------------
```

Goodness of fit

```
------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
          chi2_ms(2) |    118.190   model vs. saturated
            p > chi2 |      0.000
          chi2_bs(5) |    417.665   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
               RMSEA |      0.567   Root mean squared error of approximation
 90% CI, lower bound |      0.482
         upper bound |      0.656
              pclose |      0.000   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                 AIC |   4702.353   Akaike's information criterion
                 BIC |   4724.742   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                 CFI |      0.718   Comparative fit index
                 TLI |      0.296   Tucker-Lewis index
---------------------+--------------------------------------------------------
Size of residuals    |
                SRMR |      0.111   Standardized root mean squared residual
                  CD |      0.752   Coefficient of determination
------------------------------------------------------------------------------
```

NON-SAUDI MODEL

SEM DIAGRAM SUMMARY DIAGRAM FOR THE MAIN FACTOR/VARIABLES



Summary Results

Structural equation model Number of obs = 318

Estimation method = ml

Log likelihood = -4100.5693

Standardized	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Structural						
KE <-						
OC	.7643634	.0196153	38.97	0.000	.7259181	.8028087
_cons	1.10912	.2562263	4.33	0.000	.6069255	1.611314
OS <-						

z value

```
          OC |   .1455797   .0596108     2.44   0.015     .0287447    .2624147
          IC |   .5780181   .0539263    10.72   0.000     .4723245    .6837117
       _cons |   1.181906   .2878694     4.11   0.000     .6176922    1.746119
-------------+------------------------------------------------------------------
    var(e.KE)|   .4157486   .0299865                      .3609413     .478878
    var(e.OS)|   .5204575   .0352442                       .455768    .5943286
------------------------------------------------------------------------------
LR test of model vs. saturated: chi2(2)   =    292.79, Prob > chi2 = 0.0000
```

Goodness of fit

```
-------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+---------------------------------------------------------
Likelihood ratio     |
          chi2_ms(2) |    292.794   model vs. saturated
            p > chi2 |      0.000
          chi2_bs(5) |    779.563   baseline vs. saturated
            p > chi2 |      0.000
---------------------+---------------------------------------------------------
Population error     |
               RMSEA |      0.676   Root mean squared error of approximation
 90% CI, lower bound |      0.612
         upper bound |      0.743
              pclose |      0.000   Probability RMSEA <= 0.05
---------------------+---------------------------------------------------------
Information criteria |
                 AIC |   8215.139   Akaike's information criterion
                 BIC |   8241.473   Bayesian information criterion
---------------------+---------------------------------------------------------
Baseline comparison  |
                 CFI |      0.625   Comparative fit index
                 TLI |      0.061   Tucker-Lewis index
---------------------+---------------------------------------------------------
Size of residuals    |
                SRMR |      0.130   Standardized root mean squared residual
                  CD |      0.732   Coefficient of determination
```

Correlations

1. Correlation between OC_T vs. KST_T , KSA_T, KSP_T, IC_T

nationality = saudi

Correlations[a]

		OC_T	KST_T	KSA_T	KSP_T	IC_T
OC_T	Pearson Correlation	1	.710**	.553**	.689**	.691**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	182	182	182	182	182
KST_T	Pearson Correlation	.710**	1	.619**	.531**	.573**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	182	182	182	182	182
KSA_T	Pearson Correlation	.553**	.619**	1	.590**	.522**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	182	182	182	182	182
KSP_T	Pearson Correlation	.689**	.531**	.590**	1	.601**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	182	182	182	182	182
IC_T	Pearson Correlation	.691**	.573**	.522**	.601**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	182	182	182	182	182

**. Correlation is significant at the 0.01 level (2-tailed).

a. nationality = saudi

nationality = non-saudi

Correlations[a]

		OC_T	KST_T	KSA_T	KSP_T	IC_T
OC_T	Pearson Correlation	1	.719**	.537**	.603**	.738**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	318	318	318	318	318
KST_T	Pearson Correlation	.719**	1	.601**	.626**	.686**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	318	318	318	318	318
KSA_T	Pearson Correlation	.537**	.601**	1	.589**	.595**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	318	318	318	318	318
KSP_T	Pearson Correlation	.603**	.626**	.589**	1	.691**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	318	318	318	318	318
IC_T	Pearson Correlation	.738**	.686**	.595**	.691**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	318	318	318	318	318

**. Correlation is significant at the 0.01 level (2-tailed).

a. nationality = non-saudi

2. Correlation between OC_T vs. OS_T factors (OS_Oper & OS_Finan)

nationality = saudi

Correlations[a]

		OC_T	OS_T	OS_Oper	OS_Finan
OC_T	Pearson Correlation	1	.607**	.580**	.548**
	Sig. (2-tailed)		.000	.000	.000
	N	182	182	182	182
OS_T	Pearson Correlation	.607**	1	.929**	.928**
	Sig. (2-tailed)	.000		.000	.000
	N	182	182	182	182
OS_Oper	Pearson Correlation	.580**	.929**	1	.723**
	Sig. (2-tailed)	.000	.000		.000
	N	182	182	182	182
OS_Finan	Pearson Correlation	.548**	.928**	.723**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	182	182	182	182

**. Correlation is significant at the 0.01 level (2-tailed).

nationality = non-saudi

Correlations[a]

		OC_T	OS_T	OS_Oper	OS_Finan
OC_T	Pearson Correlation	1	.572**	.586**	.474**
	Sig. (2-tailed)		.000	.000	.000
	N	318	318	318	318
OS_T	Pearson Correlation	.572**	1	.929**	.925**
	Sig. (2-tailed)	.000		.000	.000
	N	318	318	318	318
OS_Oper	Pearson Correlation	.586**	.929**	1	.720**
	Sig. (2-tailed)	.000	.000		.000
	N	318	318	318	318
OS_Finan	Pearson Correlation	.474**	.925**	.720**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	318	318	318	318

**. Correlation is significant at the 0.01 level (2-tailed).

a. nationality = non-saudi

3. Correlation between IC_T factors (IC_Human, IC_Strucutral, and IC_Relational) vs. OS_T factors (OS_Oper & OS_Finan)

nationality = saudi

Correlations[a]

		IC_T	IC_Human	IC_Structural	IC_Relational	OS_T	OS_Oper	OS_Finan
IC_T	Pearson Correlation	1	.841**	.872**	.880**	.665**	.638**	.596**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	182	182	182	182	182	182	182
IC_Human	Pearson Correlation	.841**	1	.583**	.601**	.488**	.482**	.423**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	182	182	182	182	182	182	182
IC_Structural	Pearson Correlation	.872**	.583**	1	.678**	.614**	.562**	.578**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	182	182	182	182	182	182	182
IC_Relational	Pearson Correlation	.880**	.601**	.678**	1	.621**	.610**	.543**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	182	182	182	182	182	182	182
OS_T	Pearson Correlation	.665**	.488**	.614**	.621**	1	.929**	.928**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	182	182	182	182	182	182	182
OS_Oper	Pearson Correlation	.638**	.482**	.562**	.610**	.929**	1	.723**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	182	182	182	182	182	182	182
OS_Finan	Pearson Correlation	.596**	.423**	.578**	.543**	.928**	.723**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	182	182	182	182	182	182	182

**. Correlation is significant at the 0.01 level (2-tailed).

a. nationality = saudi

nationality = non-saudi

Correlations[a]

		IC_T	IC_Human	IC_Structural	IC_Relational	OS_T	OS_Oper	OS_Finan
IC_T	Pearson Correlation	1	.868**	.895**	.874**	.685**	.696**	.573**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	318	318	318	318	318	318	318
IC_Human	Pearson Correlation	.868**	1	.669**	.625**	.561**	.575**	.464**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	318	318	318	318	318	318	318
IC_Structural	Pearson Correlation	.895**	.669**	1	.682**	.597**	.587**	.520**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	318	318	318	318	318	318	318
IC_Relational	Pearson Correlation	.874**	.625**	.682**	1	.649**	.675**	.527**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	318	318	318	318	318	318	318
OS_T	Pearson Correlation	.685**	.561**	.597**	.649**	1	.929**	.925**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	318	318	318	318	318	318	318
OS_Oper	Pearson Correlation	.696**	.575**	.587**	.675**	.929**	1	.720**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	318	318	318	318	318	318	318
OS_Finan	Pearson Correlation	.573**	.464**	.520**	.527**	.925**	.720**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	318	318	318	318	318	318	318

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix E

Interview Protocol Guide

Topic

"The Influence of Organisational Culture and Knowledge Environment on Organisational Success in Saudi Arabia IT Firms"

Introduction

Objectives

To study the knowledge-sharing environment towards the organisational success by gathering the information about:

Your staff;

Your team;

Your Superior, and

Your firm's performance success towards the knowledge environment factors.

Outcomes

Case study reports, journal and conference publications. Interview Conduct:

Permission to record the interview using digital note taking device.

Confidentiality- The interview record will not be released and will be erased after it has been transcribed. Your name will not be identified. Results of the study will be aggregated and presented in the study.

For any reason, if there is any question that you prefer not to answer please let me know.

*** START RECORDING ***

1) ORGANISATIONAL CULTURE SUPPORT QUESTIONS

INTERPERSONAL TRUST QUESTIONS

General: Please think of your firm as a whole (Look at yourself and the others).

1. How do you evaluate the level of trust between co-workers in your company?
2. Do you hesitate to share your feelings and point of views with colleagues? What about others?

COMMUNICATION

General: Please think of ways of communication.

1. How do you communicate between colleagues within the organisation?
2. How does the organisation encourage staff to share knowledge between colleagues?
3. What kind of resources does the organisation provide to facilitate knowledge sharing?

TECHNOLOGY SUPPORT

General: Please think about your technology support.

1. How do you evaluate or rank the technology support in your company in general? In addition, to help you share knowledge?
2. What kinds of tools are available in your organisation in order for colleagues to communicate with one another and share knowledge?
3. Employees use expensively electronic storages to access data/information/knowledge (such as online database and knowledge bases)? Existed in the organisation? To what extent?

2) KNOWLEDGE ENVIRONMENT SUPPORT QUESTIONS

KNOWLEDGE SHARING TYPES (EXPLICIT)

General:

1. Do employees share explicit knowledge through a formal and systematic discussion?
2. Is it considered easy to share explicit knowledge between co-workers within the organisation?

KNOWLEDGE SHARING TYPES (TACIT)

1. Do you believe that tacit knowledge sharing is only developed through human experience? Explain why?
2. Does your company have limited awareness of tacit knowledge sharing including co-workers unwillingness to share knowledge with one another? Explain why?

KNOWLEDGE SHARING APPROACHES (CODIFICATION)

1. Does codification (documentation) of knowledge is significant when considering transferability of knowledge? How and to what extent?

KNOWLEDGE SHARING APPROACHES (PERSONALISATION)

1. Does personalisation considered a significant tool for transferring knowledge within the organisation? How and to what extent?

KNOWLEDGE SHARING PROCESS (COLLECTION)

1. Do your colleagues share with you the information they know when you ask them? How and to what extent?

KNOWLEDGE SHARING PROCESS (DONATION)

1. When you learned something new, do you tell your colleagues in your organisation about it?

INTELICTUAL CAPITAL

HUMAN CAPITAL

1. How does your organisation invest in human resources in order to increase efficiency?

STRUCTURAL CAPITAL

1. Does the organisation consist of mechanisms and tools for employees to complete their daily tasks? How and to what extent?

RELATIONAL CAPITAL

1. How does your company maintain long-term relationships with customers, stakeholders and strategic partners?

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3) ORGANISATION SUCCESS SUPPORT QUESTIONS

OPERATIONAL PERFORMANCE

1. How do you evaluate organisation success as an operational performance?

FINANCIAL PERFORMANCE

<u>General:</u>

1. How do you evaluate organisation success as a financial performance?

ENDING QUESTIONS

Is there anything else that you want to comment on about your organisation?

STOP RECORDING

Appendix F

Descriptive Summary and Examples of Rating Results of Case Study

Table F-1 Descriptive Summary and Rating Results of Firm A

Constructs	Factors	Descriptive Summary	Ratings
(OC)	**Trust** 1.Level of trust	STC is a very huge organisation which it has around 18000 to 20000 employees around the Kingdom of Saudi Arabia. Therefore, it is going through a changing culture and a changing mind set to take the organisation through the right direction. The level of trust in the organisation is considered high because the phase of mind set change that the organisation is developing. However, not to be delegated totally the level of trust has to be monitored in somehow in order to be approved and fallow its colleagues regardless the circumstances.	High
	2. Sharing feelings and point of views with colleagues	I am direct in my approach and in my point of views because of my experience to change the culture, in order to develop a better environment. In addition, considered others feedback is always significant, especially positive feedbacks to improve their skills and motivate my colleagues (team members).	Medium
	Communication 1.Types of Communication	Email, phone is always our options. However, in the past we use to communicate through formal writings (letters) because the organisation was completely government but now since it moved to a private sector the procedures has changed.	High
	2.Encourage to share knowledge with Colleagues	The change of culture, level of training, outside employees HR broadcast to improve and encourage new ideas and topics.	Medium
	3.Resources the organisation use for knowledge sharing	ARP portal to use the provided tools for knowledge sharing and help group discussion for example, “dewanya” is one of them.	High

	Technology Support 1.Rank of technology support	Perfect technology, high standard tele present, which is a cisco product that has a very high advanced screen. Therefore, the technology we have is considered to be in a very high level.	High
	2.Tools used for knowledge sharing	Advance technology used in order to minimize cost for employees such as travel cost.	High
	3.Electronic storages used to access data	The organisation has a strict database regulation for employees to access the storage space. Each employee has a limited access depending on their level of employment and type of department because of security reasons. However, employees can put shared documents to share knowledge with their colleagues.	Low
(KST)	**Explicit** 1.Sharing explicit knowledge through discussion	Yes, and it's considered optional because the organisation is trying to encourage the idea of knowledge sharing.	Medium
	2.Easy to share knowledge between co-workers	It's considered easy but need to get used to it because of the culture change.	Low
	Tacit 1.Tacit knowledge sharing is developed through human experiences	Yes, 100% especially if the individual is in a new area but it all depends on the individual himself.	High
	2.Limited awareness for tacit knowledge sharing	No limitation, if we need anything from the portal you have to ask to use certain information work or project if there is any concern, they will stop.	Medium
(KSA)	**Codification** 1.Significance of documentation for knowledge transferability	The organisation does not use the approach of documentation but I hope they do document for future references, and backed-up.	Low
	Personalisation 1.Significance of personalisation as a tool for transferring knowledge	We do not consider personalisation.	Low

(KSP)	**Collection** 1.Sharing information with colleagues	Yes, they do and with no limits and nothing to be hidden from one another.	High
	Donation 1.Learning new information	Yes, they do.	Medium
(IC)	**Human Capital** 1.Investment in human resources	The organisation is going through a cultural change because our customer comes first and employees first as well, also they concentrate in certain training and they are working towards investing in their human capital for giving the organisation more efficiency.	Low
	Structural Capital 1.Tools that help employees complete their tasks	Yes, 100%, socially, the development of new tools and new development of the portal for employee's use.	High
	Relational Capital 1.Monitroing long-term relationship with customers, stakeholders & strategic partners	Our customers are divided into companies and consumer. For the companies our teams take care of their services and each team has certain tasks. However, the consumers are developing well.	Medium
(OS)	**Operational Performance** 1.Evaluation of organisational success	STC has reached most homes in Saudi Arabia and is developing widely throughout the company, it might not satisfy all consumers need but the highest percentage of the community population is using our services.	Medium
	Financial Performance 1.Evaluation of organisational success	Perfect, revenues are increasing year by year. They are moving into the right track and highly increasing profits from last year.	High

Table F-2 Descriptive Summary and Rating Results of Firm B

Constructs	Factors	Descriptive Summary	Ratings

(OC)	**Trust** 1.Level of trust	The organisation is moving to a new phase for all other organisations is going through LOB (Line of Business) it's all a matrix , financially, planning, strategy and all of the companies are going through these organisations. In LOB the trust is very high, below LOB is very low from the scale of 10 is a rank of 4 and people from this line of LOB and out of the LOB have very low trust but in the LOB are very high.	High
	2. Sharing feelings and point of views with colleagues	Up to a certain level only if, it has a business implication and does not contradict with the corporate directions.	Medium
	Communication 1.Types of Communication	Mobile phone and conference calls, number 2 is emails.	High
	2.Encourage to share knowledge with Colleagues	Organized periodic sessions, workshops, brains storming meetings, and case studies to leverage the experiences.	High
	3.Resources the organisation use for knowledge sharing	Electronic work places and internal portals.	High
	Technology Support 1.Rank of technology support	We are a tech company its very high end because we sell technology	High
	2.Tools used for knowledge sharing	Work places, portal and electronic depositories.	High
	3.Electronic storages used to access data	We have our own database, it is within the company, and we do not invest in it.	Low
(KST)	**Explicit** 1.Sharing explicit knowledge through discussion	Workshops and brain storming, but knowledge sharing in specific areas not on an open platform.	Medium
	2.Easy to share knowledge between co-workers	It is relatively easy yes.	High
	Tacit		

	1.Tacit knowledge sharing is developed through human experiences	Yes, education experiences but for example work experiences is something we are lacking.	Low
	2.Limited awareness for tacit knowledge sharing	No, we do not have this awareness; they might not share the knowledge because they might not be interested.	Low
(KSA)	**Codification** 1.Significance of documentation for knowledge transferability	Yes we do. We try to do it in knowledge that build an impact, because if we capture all the knowledge we are concern that it might lose its significance.	Low
	Personalisation 1.Significance of personalisation as a tool for transferring knowledge	Yes personalisation for groups in order to help communication and knowledge transfer within the organisation.	Medium
(KSP)	**Collection** 1.Sharing information with colleagues	Yes, they do but it is hard because they do not tend to spare the time to do so and probably because of their priority.	Medium
	Donation 1.Learning new information	Yes I do, most probably if they capture the knowledge it will help increase their performance.	Medium
(IC)	**Human Capital** 1.Investment in human resources	Training, coaching and mentoring.	High
	Structural Capital 1.Tools that help employees complete their tasks	Very much yes, we do, we have a very structure reporting systems that can measure the performance and efficiency using KPI is that is d riven by revenue.	High
	Relational Capital 1.Monitroing long-term relationship with customers, stakeholders & strategic partners	Building trust is the most significant factor.	High
	Operational Performance		High

(OS)	1.Evaluation of organisational success	By achieving the revenue KPIs that are set time wise, value wise and profit wise.	
	Financial Performance 1.Evaluation of organisational success	We generate the profits needed in the right time we are excellent in financial performance.	High

Table F-3 Descriptive Summary and Rating Results of Firm C

Constructs	Factors	Descriptive Summary	Ratings
(OC)	**Trust** 1.Level of trust	The level of trust is high whoever joins because the turnover is high since it is a private Saudi company. They look at trust from their own perspective to gain a better opportunity in the company but considering his/her, motivation they will make good to the company, and it is more of a personal motivation than the trust itself with the company.	High
	2. Sharing feelings and point of views with colleagues	Not at all, we have different departments and it depends on the departments itself, each manager would work with his team, and they will not share with one another. For example, my sales department tends to share their feelings, point of view and share the knowledge between one another but other departments will not consider sharing of their point of views with others.	Medium
	Communication 1.Types of Communication	Officially by emails, non-official face-to-face.	High
	2.Encourage to share knowledge with Colleagues	I personally have a problem with that, for example we have three departments: 1)solution department, they deal with the solutions itself their vendors , customers' needs an antivirus solution that suits their needs, so they go and find out the best suitable solution based on their partnership level customer needs , then they provide technical solutions 2) consultant department, they deal with	

		services, like penetration testing, try to hack into organisations that they can find the problems to provide their services 3) Sales department, not technical department in which I am a part of it, we need to know what's on our back to talk with our customers better , if one of the departments (solution team or consultancy) won't do their job good and won't provide enough information or enough knowledge to provide to the sale department to present it to the customer. However, as sales we have to understand the customers need in order to provide their service this is where I go to the other way around.	Low
	3.Resources the organisation use for knowledge sharing	From a sales perspective we meet customers in which they need a certain service for example, antivirus they do not know which one they need, there might be 10 vendors for one technology. We as an IT technology organisation provide a service that we present the technology of the products were we share the knowledge with the customers to make them understand exactly their need from a sales perspective. So, knowledge sharing is considered internally, which is called the academy business line were we do it to the public and companies to take the course and use the knowledge sharing methodology through this academy.	High
	<u>Technology Support</u> 1.Rank of technology support	The technology support within the organisation were knowledge is shared through email so that technology is efficient and is ok, but sometimes we do POC (Proof Of Concept) this is where we have the vendors try to convince the customers with the product on which they implement their product for a period of time if it does the job we consider a proposal and move forward with the implementation.	High
	2.Tools used for knowledge sharing	Emails exchange.	Medium

		We have also a shared folder and we can drop the information there and look at it from another perspective.	
	3.Electronic storages used to access data	Yes, we have a full database that we have access for past projects and work.	High
(KST)	**Explicit** 1.Sharing explicit knowledge through discussion	Yes, we do have a meeting each week (management meeting) were things become more formal and systematic and let's say I have a request from a customer I send it to the presale team then we communicate with the vendor so we have a formal cycle.	High
	2.Easy to share knowledge between co-workers	Depends on the knowledge what kind of knowledge.	Low
	Tacit 1.Tacit knowledge sharing is developed through human experiences	Depends on the individual himself, but I do tend to share knowledge openly.	Low
	2.Limited awareness for tacit knowledge sharing	In addition, it depends on the individual himself, if they are willing to share their knowledge if not they will not share and so on. However, me personally I would share it because it is healthy, regardless the circumstances.	Medium
(KSA)	**Codification** 1.Significance of documentation for knowledge transferability	Depends what knowledge we are sharing, is it a meeting with a customer yes we do document everything, if we are just for example brain storming we will not document it. It all depends on the engagement and the formality of the engagement.	Medium
	Personalisation 1.Significance of personalisation as a tool for transferring knowledge	Yes, I do give out the suggestions to the function owner, but it is not my field or task to change it.	Low
(KSP)	**Collection** 1.Sharing information with colleagues	Again it depends on the individual, department, the project and how relevant that individual with the project or task.	Low
	Donation		

	1.Learning new information	Yes I do.	High
(IC)	**Human Capital** 1.Investment in human resources	In terms of human power we have two individuals for outsource projects we tend to have the project management team deals with it and make outsource with other project. We also have an incentive, for example, you took a course we would pay for it and would consider in the yearly increase and that is part of the investment in human resource and we give a carrier consultant especially for fresh graduates.	High
	Structural Capital 1.Tools that help employees complete their tasks	To an extent yes, the department itself gives a task to individuals working in the department, sometimes weekly tasks sometimes daily or an hourly task so as soon as you finish the task they have to give it to the task owner, because our goals are to make money so last minute decisions we sometime have to ask, so task oriented mechanisms not an actual mechanism like big companies.	Medium
	Relational Capital 1.Monitroing long-term relationship with customers, stakeholders & strategic partners	Customers: Responsibility of the sales team, to conduct weekly meetings with major accounts, monthly meetings to medium to small accounts were we talk about general stuff and what requirement they have and also from the marketing perspective we send them newsletters, reports around the world we send it to our customers. Stakeholder: It is the responsibility of higher management, they get the pipeline for current projects we have and they make presentation with higher management. Strategic partners: it is a financial relationship we open doors for accounts we have strong relationship with them and they tend to work on it to close deals.	High
	Operational Performance	Technical team are full occupied they work with a squeezed man-days and they	

(OS)	1.Evaluation of organisational success	are working sometimes they ask for 30 days and I try to push for less time and work on a daily bases so they can work better and more efficient so projects can be going and this is how its efficient.	Medium
	Financial Performance 1.Evaluation of organisational success	1) I am getting projects with high margins, sometimes I get projects with low margin I do not benefit from it but as long as it is not an expense I am still making profit in which it will help me on building a relationship with the customers were I am gaining experience and knowledge from the customer. 2) Getting projects with high margins for example the cost in one million the customer paid 2 million so I gained 50% of it is my margin this is an example of high margin projects and this means financially stability and in terms of financial is good, good reference good experience.	High

Table F-4 Descriptive Summary and Rating Results of Firm D

Constructs	Factors	Descriptive Summary	Ratings
(OC)	**Trust** 1.Level of trust	It is a high level of trust and this is part of the culture in my organisation.	High
	2. Sharing feelings and point of views with colleagues	Not at all, yes because of my position, and for others they are open to share their opinion and point of views.	High
	Communication 1.Types of Communication	Multiple ways, emails and quick meetings, direct communication, ad hoc without any preparation.	High
	2.Encourage to share knowledge with Colleagues	It is a learning organisation culture overall, in any meeting I usually mention the cumulative experience; the experience that we gain from the market is something I encourage to share with everyone in the organisation.	High

	3.Resources the organisation use for knowledge sharing	On our level as a branch, we organize meetings for every one and select a topic that is significant to everyone and we select a person in which he/she will present to share the knowledge. Companywide we have a quarter online training to share knowledge from the corporate to the remote branches.	High
	Technology Support 1.Rank of technology support	Very high, very helpful and we get up to speed with any new information, new market trend because of technology support and knowledge sharing.	High
	2.Tools used for knowledge sharing	Emails, phones, we are using Microsoft communicators, web conferencing like WebEx.	High
	3.Electronic storages used to access data	Very heavily usage of the database.	High
(KST)	**Explicit** 1.Sharing explicit knowledge through discussion	I think we can make it more systematic because it is more of ad hoc.	Medium
	2.Easy to share knowledge between co-workers	Yes it is.	High
	Tacit 1.Tacit knowledge sharing is developed through human experiences	I believe in direct human experiences and it is the most efficient way to share knowledge.	High
		It's part of the culture it is not elective, so if we find someone who is not willing to	High

	2.Limited awareness for tacit knowledge sharing	share the knowledge we address it seriously.	
(KSA)	**Codification** 1.Significance of documentation for knowledge transferability	I am a big believer of documenting the knowledge, experiences and best practice that we learn every day. However, there is no capacity for co-workers time to embrace documentation of knowledge.	Low
	Personalisation 1.Significance of personalisation as a tool for transferring knowledge	Yes, it's considered significant, we have a program that personalise the training path of any employee based on an assessment of the beginning of the year, based on the results we personalise the training path.	High
(KSP)	**Collection** 1.Sharing information with colleagues	Yes, they share it and depending on the employee or the individual.	Medium
	Donation 1.Learning new information	Yes.	High
(IC)	**Human Capital** 1.Investment in human resources	There is a continuous search for talents to be added and returned.	Medium
	Structural Capital 1.Tools that help employees complete their tasks	Yes not to a high extent, the team I manage is customer facing so they depend on human interaction more than automated systems to finish their tasks.	High
	Relational Capital 1.Monitroing long-term relationship with customers, stakeholders & strategic partners	The key is our general care about their satisfaction, the company interest has to be reserved but we really believe adding value to customers, stakeholders and strategic partners.	High
	Operational Performance		

(OS)	1.Evaluation of organisational success	If the customers are satisfied and the employees are satisfied, this would be an indication for organisations success from an operational perspective.	High
	Financial Performance 1.Evaluation of organisational success	If the company is meeting its annual financial goals and growing its market share then that will be satisfactory for the shareholder and indicators for the financial performance.	High

Table F-5 Descriptive Summary and Rating Results of Firm E

Constructs	Factors	Descriptive Summary	Ratings
(OC)	**Trust** 1.Level of trust	In general, the organisation has a high level of trust between employees.	High
	2. Sharing feelings and point of views with colleagues	Of-course yes I would share everything, and will not bottle anything whether to my superiors or my employees.	High
	Communication 1.Types of Communication	All media of communications, phones, meetings, what's app allot, regular review meetings face-to-face.	High
	2.Encourage to share knowledge with Colleagues	We have a regular communication magazine through emails that we send in a regular basis every month, new success, new wings and new experience. The portal is one of the largest in the world that is always updated and addition to that, we only have big conventions every year that I personally attend yearly one in Dubai and one in Last Vegas and we have different classes that has all updated knowledge and technologies that is all available.	High
	3.Resources the organisation use for knowledge sharing	Portal in specific but we have learning solutions within the organisations and the big conventions and I also have something special I provide within the team, we create our own task force to our platform	

		as a service for the cloud of IBM and we gift task for certain employees in which they learn by practice this is something that we created in our team, in the rank of 100 employees they found that the practice is excellent and would love to implement in the middle east and Africa.	High
	Technology Support 1.Rank of technology support	I think we are the number one company in the world and we have all the tools that we have in order to share knowledge and learn.	High
	2.Tools used for knowledge sharing	Emails, phone, what's app, messaging (same time) which is similar to the messenger, video conferencing tools and audio conferencing tools.	High
	3.Electronic storages used to access data	We have our own product that we use internally and externally that is called "box", when we want to share big files and videos that we use through this "box" so we use internally and externally that is an IBM product.	High
(KST)	**Explicit** 1.Sharing explicit knowledge through discussion	In general yes, but it depends on the individual some share allot some do not. The tools are available it all depends on the discipline and environment, some mangers they do encourage sharing knowledge some do not which is not the norm in IBM but we do share allot.	Medium
	2.Easy to share knowledge between co-workers	Yes.	High
	Tacit 1.Tacit knowledge sharing is developed through human experiences	In general yes but it really depends on the individuals, I am an individual that I share everything but they will usually do.	Medium
	2.Limited awareness for tacit knowledge sharing	No.	High
	Codification	Absolutely yes, different knowledge has different ways of documentation, if we	

(KSA)	1.Significance of documentation for knowledge transferability	have a certain knowledge we want to document for the market, how we implement and integrate before we present it to the customer, the product itself will only have its value when you put all the knowledge around one of course product or service. IBM have allot of industry knowledge, oil and gas, healthcare and so on this is through all the knowledge from the projects we do with customers and then we document these experience so others can benefit from it. Building references is one of the most important means of knowledge sharing for example, the references we do, not only share knowledge we let our customers share knowledge. If we have a successful project with a customer, there is a process to certify him as an IBM reference. If I have a new customer that is going through something similar, we can use that reference customer to give him the knowledge, experience, do's and don'ts so we use our successful customers that they get to use the knowledge.	High
	<u>Personalisation</u> 1.Significance of personalisation as a tool for transferring knowledge	Not necessarily we have so many to use for knowledge sharing it's hard to specify one for personalisation we only consider the best one we need to use for knowledge sharing.	Medium
(KSP)	**<u>Collection</u>** 1.Sharing information with colleagues	In general yes and fully and it really depends on the ground of trust we have between employees. I do not think any of the employees will not share unless they have a trust issue but usually that is not the norm in IBM.	Medium
	<u>Donation</u> 1.Learning new information	Yes.	High
	<u>Human Capital</u> 1.Investment in human resources	Multiple things, IBM in general they are very generous in their packages so they only attract the best people in the market. They are programs for fresh graduate with a technical or business path. Any employee has to go through a certification path for his newly join that takes about six	High

(IC)		months for his certification on the job training and courses that he has to be examined. So people tend to be in the same page when they do business. We are a very dynamic business therefore; we are always in a non-ending periodic timing.	
	Structural Capital 1.Tools that help employees complete their tasks	Yes, and so many productivity tools, internal applications, emails, reports, etc.	High
	Relational Capital 1.Monitroing long-term relationship with customers, stakeholders & strategic partners	Customers & stakeholders: A relationship layer handles customer's relationship with IBM and sometimes give them advice, on the technical level there is ongoing support contracts between customers and IBM so they make sure that they benefit from the products and services to the maximum and there is an annual survey. We conduct different large conventions in a year product centric/or industry centric and invite allot of strategic customers to it so they benefit from their peers and their experiences globally. For example, telecommunication event we share and facilitate what is happening what are the latest updates and this is so significant for the customers. Strategic partners: Generous rebate programs for highly preforming partners, continues training programs for them to make them up to date when it comes to IBM technology and we help them close allot of business as they do. Training is through two different levels 1) Technical and 2) business. We make sure they make good business with IBM.	High
(OS)	**Operational Performance** 1.Evaluation of organisational success	Efficiency, simplify and avoiding precocity	High
	Financial Performance		High

	1.Evaluation of organisational success	Profitability, growth, value per share in a year and achieving expected targets.	

Table F-6 Descriptive Summary and Rating Results of Firm F

Constructs	Factors	Descriptive Summary	Ratings
(OC)	**Trust** 1.Level of trust	Very high.	High
	2. Sharing feelings and point of views with colleagues	In somehow, not everything I am very selective.	Medium
	Communication 1.Types of Communication	Verbally, phone or email. However, email for professional purposes.	High
	2.Encourage to share knowledge with Colleagues	Public webinar sometimes restricted to enforce to attend some certain seminars.	High
	3.Resources the organisation use for knowledge sharing	PowerPoint, knowledge sharing through the portal to get all the information and of course emails.	High
	Technology Support 1.Rank of technology support	Technology is very high. Always maintain to be updated according to the market because we are a very high competitive market so we are always updated.	High
	2.Tools used for knowledge sharing	Verbally, phone or email.	High
	3.Electronic storages used to access data	Yes, we do, fully because it is constantly updated.	High
(KST)	**Explicit** 1.Sharing explicit knowledge through discussion	Yes, they do.	High
	2.Easy to share knowledge between co-workers	Yes, it is.	High

	Tacit 1.Tacit knowledge sharing is developed through human experiences	Of course, because IT experience is based on situations and experience so if there is a problem or experience is gained by life experience and work in which they will share it with their co-workers. Trial errors so many times until they solve the issue if it does not work at the end they will get together as a group to discuss and try to solve it. In addition, at the end of the day everything is documented.	High
	2.Limited awareness for tacit knowledge sharing	No.	High
(KSA)	**Codification** 1.Significance of documentation for knowledge transferability	Yes, it is highly considered. By using case studies, they give a brief scenario about the issues and its problems and how it is solved.	High
	Personalisation 1.Significance of personalisation as a tool for transferring knowledge	Yes, they do personalise, we have a certain website only accessible through certain employee's for accessing this data and it is all available in the portal.	High
(KSP)	**Collection** 1.Sharing information with colleagues	Yes to the full extent and this is what I like about the environment of my company and not even officially we do it causally sitting in the office in an open discussion.	High
	Donation 1.Learning new information	Yes, I do and this is how our culture develops for knowledge sharing and information.	High
(IC)	**Human Capital** 1.Investment in human resources	Training, exams refresh courses, incentives, monetary incentives (such as payments).	High
	Structural Capital 1.Tools that help employees complete their tasks	Yes, they do, sales force is a portal to track achievements, tasks especially sales team to get updated tasks for employees on current projects they are working on.	High
	Relational Capital		

	1.Monitroing long-term relationship with customers, stakeholders & strategic partners	Through account management to maintain the relationship between customers and the company that we have to support.	High
(OS)	**<u>Operational Performance</u>** 1.Evaluation of organisational success	Yearly survey to maintain employee's satisfaction, asking from the employees how to improve. Availability of higher manager to get up the chain if I have a problem, illustrate on certain problems if any updates. Encourage creativity, part of the organisation to protect their rights. Monetary incentive to motivate and aim for the best and not staying where you are to get the promotion.	High
	<u>Financial Performance</u> 1.Evaluation of organisational success	Our company is doing really well with our financial were we are maintaining low growth every quarter to make it very steady instead of having a high growth from time to time.	High

Table F-7 Descriptive Summary and Rating Results of Firm G

Constructs	Factors	Descriptive Summary	Ratings
	<u>Trust</u> 1.Level of trust	Very low, because the people working in the organisation are most of the time busy and we do not have enough time to communicate well enough to gain trust.	Low
	2. Sharing feelings and point of views with colleagues	I never hesitate to share with my colleagues.	Medium
	<u>Communication</u> 1.Types of Communication	Calls and emails.	High
	2.Encourage to share knowledge with Colleagues	I always start with myself to share each new knowledge.	Medium

(OC)	3.Resources the organisation use for knowledge sharing	Intranet that has everything like the document management, company magazine that is part of the intranet as well, mail announcements.	High
	Technology Support 1.Rank of technology support	The technology support is not very high in regards the financial support conflict.	Medium
	2.Tools used for knowledge sharing	Share point, link service (Skype for business, audio and video).	Medium
	3.Electronic storages used to access data	Yes, the database exist through cloud storage models for example one drive.	High
(KST)	**Explicit** 1.Sharing explicit knowledge through discussion	Yes you do.	High
	2.Easy to share knowledge between co-workers	Yes it is.	High
	Tacit 1.Tacit knowledge sharing is developed through human experiences	Yes, its logic because through experience people gain knowledge especially being a head of the IT department I am keen to give knowledge that I have and also learn from my team the knowledge they do have as well.	High
	2.Limited awareness for tacit knowledge sharing	There is no limited awareness.	High
(KSA)	**Codification** 1.Significance of documentation for knowledge transferability	Yes, I highly consider documentation for knowledge sharing to the maximum extent.	High
	Personalisation 1.Significance of personalisation as a tool for transferring knowledge	Yes sometimes.	Medium

(KSP)	**Collection** 1.Sharing information with colleagues	Yes, I do to the maximum extent if needed.	High
	Donation 1.Learning new information	Yes I do	High
(IC)	**Human Capital** 1.Investment in human resources	Medium level of investment.	Medium
	Structural Capital 1.Tools that help employees complete their tasks	Yes through the help desk.	Medium
	Relational Capital 1.Monitroing long-term relationship with customers, stakeholders & strategic partners	Through annual events and invitations.	Medium
(OS)	**Operational Performance** 1.Evaluation of organisational success	Operational performance is very good because working to the maximum power of the human resources we have.	High
	Financial Performance 1.Evaluation of organisational success	Yes it is very good	High

Table F-8 Descriptive Summary and Rating Results of Firm H

Constructs	Factors	Descriptive Summary	Ratings
(OC)	**Trust** 1.Level of trust	I do not trust my colleagues in the organisation because of miss communication therefore, I only trust my team and we are working in improving the level of trust within the organsiation.	Low
	2. Sharing feelings and point of views with colleagues	I do not share my point of view and feelings with my colleagues, but some do depends on the individual and their personality.	Low
	Communication 1.Types of Communication	Emails and face-to-face meetings.	High
	2.Encourage to share knowledge with Colleagues	Internal communication through emails and weekly conference meetings.	High
	3.Resources the organisation use for knowledge sharing	They provide us with laptops, internet, personal phones, and office phones, meeting rooms with projector's and TV screens.	High
	Technology Support 1.Rank of technology support	High tech that is available that helps in knowledge sharing such as emails, calendar reminders, download your email in your phone for faster communication and the meeting rooms are highly tech tools. We also have an EVOKO system that we have screens outside each meeting room and we can book it though your calendar-using outlook and you send invitations through emails with the subject, time and location.	High
	2.Tools used for knowledge sharing	Internal network, messenger of the outlook, phones, cell phones, meeting rooms that has high tech screens and the EVOKO systems, management weekly meetings and mainly by emails to share knowledge.	High

	3.Electronic storages used to access data	The database concludes all the knowledge needed to upload and retrieve which also includes store transactions and also contains financial data of the organisation, also has the employees personal information, weekly promotions, also concludes fast moving items that move in each store from sales perspective.	High
(KST)	**Explicit** 1.Sharing explicit knowledge through discussion	They do.	High
	2.Easy to share knowledge between co-workers	Yes.	High
	Tacit 1.Tacit knowledge sharing is developed through human experiences	Yes on the job experience.	High
	2.Limited awareness for tacit knowledge sharing	Yes, it always depends on the individual and his/her personality.	Medium
(KSA)	**Codification** 1.Significance of documentation for knowledge transferability	Yes, we have minutes of meetings, we have documentation of projects when it starts and ends and the data stored on projects, products and what have worked and what did not and so on. The statistical data for successful project and things that worked out and it includes lesson learned for products that failed and projects that failed. In addition, what are the reasons we lose customers because bad customer's services, employees do not provide good services for their customers that is why we consider on the customer centric.	High
	Personalisation 1.Significance of personalisation as a tool for transferring knowledge	Yes, we have a personalised system and software for transferring knowledge and communicating between employees in the organisation.	High
	Collection	They do share information when they are asked and share knowledge from their past	

(KSP)	1.Sharing information with colleagues	experienced based on projects that are executed and completed.	High
	Donation 1.Learning new information	Not really, once I am asked.	Low
(IC)	**Human Capital** 1.Investment in human resources	They invest allot and they have on the job training but the problem is the turnover is considered very high.	High
	Structural Capital 1.Tools that help employees complete their tasks	They do provide you with everything you need from laptops, PC's, phones, emails and conference meeting rooms.	High
	Relational Capital 1.Monitroing long-term relationship with customers, stakeholders & strategic partners	Customers: They provide them with membership cards to gain points. Stakeholders: They have long-term relationship with the suppliers and contractors that have been working with us for the past 30 years that give special prices and updates with the latest technologies, equipment and material.	High
(OS)	**Operational Performance** 1.Evaluation of organisational success	It is not too successful not efficient that is why we are losing customers and because of product availability in the store, cleanliness and some of the products have bad quality and we have low performance of customer services, high waiting time for customers in cashiers and we don't have online series to order from home.	Low
	Financial Performance 1.Evaluation of organisational success	We are in deep financial trouble because we are over spending, and have expanded to fast in the past five years. We cannot maintain the quality of stores, the turnovers of employees is high due to low wages. The company have invested in other companies that are not performing well in the market.	Low

Table F-7 Descriptive Summary and Rating Results of Firm I

Constructs	Factors	Descriptive Summary	Ratings
(OC)	**Trust** 1.Level of trust	Every year when we do the performance evaluation, I evaluate according the interview that I do with my employee and what are the things that he/she achieved and ask the employee about others performance and his or her performance. The evaluation performance sheet, each employee write down their own opinion and what do they think about the company, the training, and the other employees as well.	Medium
	2. Sharing feelings and point of views with colleagues	Yes, I do share my feelings and opinion with others but in a nicer way with my partner.	High
	Communication 1.Types of Communication	We sometimes use email, internal board and sometimes face-to-face contact.	High
	2.Encourage to share knowledge with Colleagues	Internal board.	Low
	3.Resources the organisation use for knowledge sharing	We developed a system in which everyone shares his or her projects and ideas more like a room chat.	Low
	Technology Support 1.Rank of technology support	We are very high tech because all of the media is dependent on the technology therefore everything has to be saved, documented, and recorded.	High
	2.Tools used for knowledge sharing	We use emails in order to enforce the order, if want to discuss something and we are not in the company we use the chat room if it is just a notice we put a post it on the computer monitor. However, I like to use different tools in order to enforce and get the order.	Low
	3.Electronic storages used to access data	We have three ways to make a backup:	High

		1. Hard drives physically to store data 2. Shared storage space that we upload the video based information on it 3. In addition, when the internet speed is good we upload it to I-cloud.	
(KST)	**Explicit** 1.Sharing explicit knowledge through discussion	Yes.	High
	2.Easy to share knowledge between co-workers	Yes if it is systemize, you have to create the system yourself it will not be created naturally.	High
	Tacit 1.Tacit knowledge sharing is developed through human experiences	I believe some knowledge sharing is gained through human experience but for me I need to implement a system for sharing knowledge but at the end it depends on the organisation and all it depends on the type of the organisation you are in and also on the culture of the organisations.	Medium
	2.Limited awareness for tacit knowledge sharing	You always face the resistance of knowledge sharing they don't like to share their knowledge because they don't like to report, so you have sometimes to force it and tell them that this is the way that the company works. Especially with technical people, they keep saying that how would they share it and how would they explain. Therefore, the trick is to share as much as possible.	Low
(KSA)	**Codification** 1.Significance of documentation for knowledge transferability	Of course, I really believe in documentation of knowledge because sometimes someone is going to continue your work, so if you do not document who would continue were you left off, and it's so beneficial for the organisations if that individual is gone.	Medium
	Personalisation 1.Significance of personalisation as a	Personalisation would be beneficial but very expensive, when we wanted to personalise our own system we found it	Medium

	tool for transferring knowledge	very expensive therefore, we used a system that is available in the market.	
(KSP)	**Collection** 1.Sharing information with colleagues	Sometimes I have to force them to share others would share and it all depends on the personality.	Low
	Donation 1.Learning new information	Most of the times and I am always excited about it because I like to and at the end it depends on the individual and his/her personality.	Low
(IC)	**Human Capital** 1.Investment in human resources	The mistake we did that we have not invested in human resources. What we did is try to make them feel valued by training and funding and making them gain self-development and carrier development.	Low
	Structural Capital 1.Tools that help employees complete their tasks	The problem is that the organsiation depends mainly on creativity and we cannot have a system or criteria.	Low
	Relational Capital 1.Monitroing long-term relationship with customers, stakeholders & strategic partners	The trick is to propose long-term and short-term projects at the same time so they would be hooked and looking forward to working with us again.	Medium
(OS)	**Operational Performance** 1.Evaluation of organisational success	Achieving deadlines, recurring clients, maintaining employees (no turnover), not having problems and obstacles by having a peaceful culture.	High
	Financial Performance 1.Evaluation of organisational success	It's all about income and profit and having some for the next year, were I have projects and contracts that is already set for the next year, it's not only about the money but, the ongoing projects.	High

Table F-10 Descriptive Summary and Rating Results of Firm J

Constructs	Factors	Descriptive Summary	Ratings
(OC)	**Trust** 1.Level of trust	There is trust from one multinational to another what really matters is the team that you work with, and the more harmony is there in the team, the more the successful the team is because one of the major things that maintains this harmony is trust , only then you can delegate and collaborate between team members.	Medium
	2. Sharing feelings and point of views with colleagues	Depends on the person and the personality of the person, most of the time I do share because I am an open person. If it is a healthy team, and one of the things that indicate it is, a healthy team is there has to be good communication.	Low
	Communication 1.Types of Communication	Daily rigors (30 minutes meeting between team members 3 times a week) for structures communications for things that happens in timely manners. Another way of communication (text, chat, emails) sometimes we use WebEx if we want to do a demo for example.	High
	2.Encourage to share knowledge with Colleagues	We have a monthly meeting were we get the customer success organisation which is the team that we work with not only the project but also all of the team. In this meeting, each time there is a different member that shares their success stories.	Medium
	3.Resources the organisation use for knowledge sharing	Online courses, trainings.	Low
	Technology Support 1.Rank of technology support	The rank of technology support is very high we have all venues, tele-presents to do meetings and have allot of resources available online we choose one and just play it. There is also something called get abstract this provides a brief about books instead reading the whole book it provides you with the summary.	High

	2.Tools used for knowledge sharing	Similar to the other questions whether its emails, text, WebEx and depends on the level of communication if you need divided systematic communication you will need WebEx.	High
	3.Electronic storages used to access data	It depends what storage you are refereeing to, for example: talent has all the materials needed whether its slides that you want to go through (technical and soft skills), whether its videos. However, we do have something like a box were we share all the documentations that we upload through this box.	Medium
(KST)	**<u>Explicit</u>** 1.Sharing explicit knowledge through discussion	Yes.	High
	2.Easy to share knowledge between co-workers	Yes it is.	High
	<u>Tacit</u> 1.Tacit knowledge sharing is developed through human experiences	Sometimes yes and sometimes no. If its knowledge related customer or certain implementation or tools yes it might require experience. If not sometimes things are technical does not require high experience.	Medium
	2.Limited awareness for tacit knowledge sharing	No not really, we usually share knowledge with one another and sometimes if the knowledge we are sharing have customer information certain consents should be taking care of or satisfied.	Medium
(KSA)	**<u>Codification</u>** 1.Significance of documentation for knowledge transferability	Of course, knowledge not documented is considered lost. Therefore, it has to be documented in order to be easy to share with anyone even if you don't have the urgency to share it now for this knowledge to be served as a reference it has to be documented.	High
	<u>Personalisation</u> 1.Significance of personalisation as a	I do not think that I have the experience for tools to be personalised however, I might have a personalised process. For example, if I have many tools to choose	Medium

	tool for transferring knowledge	from I would choose the tool that satisfied the need better based on allot of things, accessibility of the team, familiarity of the product and so on.	
(KSP)	**Collection** 1.Sharing information with colleagues	Direct team yes, they are very collaborative and they do share but sometimes when whether they are knowledge owners or people whom have the knowledge of interest are from outside teams they might not be aware of the importance of this knowledge accordingly, sharing the knowledge might be of lower priority.	Low
	Donation 1.Learning new information	Yes.	High
(IC)	**Human Capital** 1.Investment in human resources	We get a good share of training both soft skills and technical skills.	Medium
	Structural Capital 1.Tools that help employees complete their tasks	Yes, travel and lodging expenses, claiming these expenses we have to use certain tools and fallow certain process, getting approvals for vacations for example, claiming your time you have to claim against a certain billing cost using a certain tool.	High
	Relational Capital 1.Monitoring long-term relationship with customers, stakeholders & strategic partners	Trust comes with delivery. For example, GE is considered a leader in power industry, if most of the equipment is GE and we are delivering then there is trust and trust is based on development through delivery.	High
(OS)	**Operational Performance** 1.Evaluation of organisational success	The simpler the process the more successful the organisation is.	Medium

	Financial Performance 1.Evaluation of organisational success	If they are making profit and they do not lose moral, but it means if they are making profit and paying their resources and keeping the equilibrium between the profit and moral so it is considered successful.	Medium

Table F-11 Descriptive Summary and Rating Results of Firm K

Constructs	Factors	Descriptive Summary	Ratings
(OC)	**Trust** 1.Level of trust	We have a very professional environment, very high trust, our employees are chosen depending on emotional intelligent, morals and how they are communicating. My team have a high level of trust and very strong bonding; we always count on each other for back up.	High
	2. Sharing feelings and point of views with colleagues	No, I believe it is more of someone's' personality. Personally, I do not hesitate in sharing my thoughts at all.	High
	Communication 1.Types of Communication	We have our company's internal collaboration tools such as: WebEx, Jabber, IP Phones, or we can reach out directly to each other, and of course via outlook email.	High
	2.Encourage to share knowledge with Colleagues	We have monthly workshops conducted by specialists, we have weekly meetings to get the team along and knowledge sharing is always on our top lists, as the business would not progress with knowledge hording.	High
	3.Resources the organisation use for knowledge sharing	We use our internal resources such as: Spark rooms, Jive sites "Employee Community", to capture our feedback, share major organisational updates and enhance collaboration with greater transparency in addition to that, we have a Knowledge Management Repository via Sales Force.com where all we need as uploaded and accessible to all employees.	High

	Technology Support 1.Rank of technology support	Excellent support.	High
	2.Tools used for knowledge sharing	As mentioned earlier, we have our internal tools, such as Spark rooms, Jive site, Sales force, Jabber, WebEx & Emails, and all available on desktop and mobile apps.	High
	3.Electronic storages used to access data	We definitely have electronic storages, but being an Information Technology company, one of our specialties is Cloud computing. We are specialized for providing cloud services for our customers and partners, so initially we have our own Cloud supported storage.	High
(KST)	**Explicit** 1.Sharing explicit knowledge through discussion	Both, depends on the type of information.	Low
	2.Easy to share knowledge between co-workers	Yes.	Medium
	Tacit 1.Tacit knowledge sharing is developed through human experiences	Yes, that person could have trust issues, or threatened by others success.	Medium
	2.Limited awareness for tacit knowledge sharing	Trust and knowledge sharing is the key of our organisations success.	High
(KSA)	**Codification** 1.Significance of documentation for knowledge transferability	Not necessarily, all employees' inquiries are widely available in our portal and accessible to all.	High
	Personalisation 1.Significance of personalisation as a	It is significant, and helps allot in knowledge transfer and also there is certain information or private information or confidential and specific information	

	tool for transferring knowledge	that has certain access to this information; where certain departments or users have certain access for information that have access to only there partners or customers. In terms of personalisation, if it has meant to be as personalised tools for our stakeholders, we actually do have our personalised tools that can help and support them in accessing the information and knowledge they need. For instant: Our partners have their customized tools to check their deals, promotions, orders, guides and trainings, etc. As for our employees, we have customized platforms and tools that assist them in supporting sales, partners and customers. Many different tools with different access levels to what certain information each departmental level can get.	High
(KSP)	**<u>Collection</u>** 1.Sharing information with colleagues	Absolutely, very transparently, we rely on each other's achievement, a member's success or failure is dependent on the entire team, and together we achieve more.	High
	<u>Donation</u> 1.Learning new information	Definitely! No questioning.	High
(IC)	**<u>Human Capital</u>** 1.Investment in human resources	Trainings, fun activities to break the formality, celebration when we succeed and appreciation for efforts.	Medium
	<u>Structural Capital</u> 1.Tools that help employees complete their tasks	We are mostly task oriented and we support promptly by the demand of Sales, Partners and Customers, we have KPI's for supporting our stakeholders in the most efficient timeframe with positive customer experience, and most of all reaching sales target as best as possible by increasing revenue. We have a system that reflects the performance for each country/region/theatre is using an internal tool that displays their performance analysis breakdown.	High
	<u>Relational Capital</u>		

	1.Monitroing long-term relationship with customers, stakeholders & strategic partners	We have an experienced sales team dedicated to our customers and partners, best products and services, customized tools to be used for them, we offer them promotions and certifications, trainings and programs, in addition to strong operations advisors and vendors across the globe to support them end-to-end. We also have our website that supports them with any inquiry/reports or documentations where they can also chat with an agent for further assistant.	High
(OS)	**Operational Performance** 1.Evaluation of organisational success	We value our customers, and we make sure they are satisfied with our services by sending them survey's to measure out our performance. In addition, we make sure we have superior customer experience by assigning qualified and fully trained customer service support, which reflects backs on the engagement between the customer and us; we also have a mailer that the customer can use to give feedback. In addition, we measure the number of escalations and create root cause analysis on how, what and why it happened and finding best practice to make sure that we have addressed all issues. We have dedicated quality and auditing teams to track customer satisfaction through our systems and we follow up and act upon the results to make sure we have addressed them properly.	High
	Financial Performance 1.Evaluation of organisational success	High performance.	High

Table F-12 Descriptive Summary and Rating Results of Firm L

Constructs	Factors	Descriptive Summary	Ratings
(OC)	**Trust** 1.Level of trust	Great high level of trust.	High
	2. Sharing feelings and point of views with colleagues	With my colleagues not at all, but with others we like to share the bright side of point of views.	Medium
	Communication 1.Types of Communication	Mobile phones and emails usually.	Medium
	2.Encourage to share knowledge with Colleagues	Usually they add all of the success stories and the problems in the organisations systems.	High
	3.Resources the organisation use for knowledge sharing	They use an ERP system for knowledge sharing.	High
	Technology Support 1.Rank of technology support	It's very high, helpful and a great knowledge base	High
	2.Tools used for knowledge sharing	Email, database and internal events.	High
	3.Electronic storages used to access data	We encourage using the company system to the maximum adding all data needed for knowledge sharing.	High
	Explicit 1.Sharing explicit knowledge through discussion	Yes they do.	High
	2.Easy to share knowledge between co-workers	Definitely yes, using the system available within the organisation.	High

(KST)	**Tacit** 1.Tacit knowledge sharing is developed through human experiences	Yes formally or through emails but it has to be through human experiences in order to share knowledge.	High
	2.Limited awareness for tacit knowledge sharing	We are using the learning management system for awareness sessions.	High
(KSA)	**Codification** 1.Significance of documentation for knowledge transferability	Yes, documentation is considered within the organsiation, usually we share the problem inside the system and within my colleagues.	High
	Personalisation 1.Significance of personalisation as a tool for transferring knowledge	Yes, we do personalise for better knowledge transfer.	High
(KSP)	**Collection** 1.Sharing information with colleagues	Yes they do, since we solve the problems together with the team.	High
	Donation 1.Learning new information	Yes I do.	High
(IC)	**Human Capital** 1.Investment in human resources	Training, we have our own investment in the employees, and the companies are investing in the scholarship if someone wants to continue their education the company does invest in human capital.	High
	Structural Capital 1.Tools that help employees complete their tasks	Yes, they do on the ERP reminder system.	High
	Relational Capital 1.Monitroing long-term relationship	Giving the lead to more than one account manager and fallow up with them every quarter and every year involving the	Medium

	with customers, stakeholders & strategic partners	business development team inside the account.	
(OS)	**Operational Performance** 1.Evaluation of organisational success	The company is expanding their operation inside the account every year, using the account manager strategy and business development strategy and they are extending their projects outside the account.	High
	Financial Performance 1.Evaluation of organisational success	With the company expansion in their operations, the company is doing better every year.	High

Table F-13 Descriptive Summary and Rating Results of Firm M

Constructs	Factors	Descriptive Summary	Ratings
(OC)	**Trust** 1.Level of trust	Trust level is very high with very few exceptions, dependent not only on the culture but it all depends on the individuals some I trust highly others might be low. In general, the level of trust is very high.	High
	2. Sharing feelings and point of views with colleagues	Of course yes, and others they do the same, it always happen in the case of establishing the trust method between us in the organsiation.	High
	Communication 1.Types of Communication	Multiple ways of communication, very classical ways of collaboration tools, emails, mobile, text, video conference but the best way I trust and more efficient and effective is the face-to-face communication.	High
	2.Encourage to share knowledge with Colleagues	I believe that C Telecom is one of the best when it comes to knowledge sharing; you believe the level of trust helps in knowledge sharing.	High

	3.Resources the organisation use for knowledge sharing	So many electronic ways for example portal that provides knowledge sharing, discussions, chatting, asking experts.	High
	Technology Support 1.Rank of technology support	For example, we collaborate with different ways, especially when it comes like objectives cross and up selling; we need to know more about each other's specialties. Our specialist , some are focused in cloud others is focused in something else, at the end the customer want to know about one story so I would learn about security and my colleague would learn about cloud.	Medium
	2.Tools used for knowledge sharing	Emails, phones, portal and face-to-face meetings.	High
	3.Electronic storages used to access data	It does exist according to the tools that I mention, we do access the database and in-rich it with adding more knowledge and we also have tools that is related to artificial intelligent were I sometimes ask a machine and the machine will answer my question.	High
	Explicit 1.Sharing explicit knowledge through discussion	It does not need to be formal and systematic, it can be very casual some in which fallows under the official umbrella.	Medium
(KST)	2.Easy to share knowledge between co-workers	Yes, it is	Medium
	Tacit 1.Tacit knowledge sharing is developed through human experiences	Human experience is a major factor but not the only one , for example the science itself, if I speak about certain topics for example security I go to my colleague and get information through human experience and the other factor if I go through the knowledge base I will grab the other factor.	Medium
		It depends on the individual.	Low

	2.Limited awareness for tacit knowledge sharing		
(KSA)	**Codification** 1.Significance of documentation for knowledge transferability	It is very significant and the way of proficient if it is well presented and established.	High
	Personalisation 1.Significance of personalisation as a tool for transferring knowledge	It is very significant to personalise tools for knowledge. This is to the extreme extent because it is very tightly attached to the person and his/her target level of the person and the system has to be intelligent enough to join the gap by building the road map that only implies to that person.	High
(KSP)	**Collection** 1.Sharing information with colleagues	Yes, they do to the maximum extent.	High
	Donation 1.Learning new information	Of-course.	High
(IC)	**Human Capital** 1.Investment in human resources	They do allot of investment because C Telecom considers human resources is the most significant asset.	High
	Structural Capital 1.Tools that help employees complete their tasks	Daily tasks no. However, we do have a reporting for specific tasks for a weekly base.	Medium
	Relational Capital 1.Monitroing long-term relationship with customers, stakeholders & strategic partners	Bottom line we capitalize on our longer-term partnership with our clients, so C Telecom is always a technology partner for our customer, we provide excellent support we not only focus on the presales but after sale as well. We typically provide end-to-end solution so one single point of contact single partner as oppose to multi vendors.	High
	Operational Performance	C Telecom is maintaining an extremely well structures business processes	

(OS)	1.Evaluation of organisational success	includes the operations essential part of it and this how they keep its structure it has to be very well processed.	High
	Financial Performance 1.Evaluation of organisational success	C Telecom depends highly on a stream of revenue that comes from different line of businesses, hardware, and software and cloud technology. However, the best revenue returns are software and cloud technologies. However, in terms of services and consultancy is considering the biggest system integrator in the market. Therefore, in financial results is focusing more on the growth technology as opposed to the commodity products.	High

Appendix G

Qualitative Assessment Rubrics

Table G-1: Organisational Culture (OC) Rubric

Sub-Factors	Ratings		
	High	**Medium**	**Low**
Interpersonal Trust (T)	-The level of interpersonal trust is high in order to develop and motivate a better opportunity within the organisation. However, very few exceptions, depends not only on the culture but it all depends on the individuals, some maybe be trusted highly others might be trusted in a lower level. Nevertheless, the level of trust is very high. -The organisation is going through an LOB (Line of Business) matrix and whomever is in this line have a very high scale of trust. Having a very professional environment, with high trust, and employees are chosen depending on emotional intelligent, morals and how they are communicating, and very strong bonding that count on each other for back up.	-There is trust but what really matters is the team members you work with if there is harmony, which makes it more successful and delegate to collaboration between them. -Sharing feelings and point of views with colleagues in a certain level of the business implication and which does not contradict with the corporate directions, and some share within the department itself and not with others. -Considering feedback is significant in order to improve individual's skills and motivate colleagues.	- The level of trust is very low because most of the employees are busy and do not have enough time to communicate with one another to gain trust. Some only trust team because lack of communication within the organisation. -Sharing feelings and point of views through individuals, depending on the person's personality.
Communication (C)	-Emails, mobiles phones, conference calls, meetings, direct communication (face-to-face), Jabber, IP Phones, ad hoc without any	-One of the major factors of encouraging employees to share knowledge with their colleagues through	-Knowledge sharing with colleagues through the internal board. In addition, a system is developed

	preparation and through WebEx, ARP portal is used for group discussion, organising periodic sessions, workshops, brain storming meetings, electronic work places, seminars and case studies to leverage the experiences of sharing knowledge with colleagues. -Non-officially face-to-face communication. -Since we are an IT company we tend to share knowledge with customers to provide them with the best technical solution and knowledge sharing is done through a course called academy business line. -It is a learning organisational culture the experience gained in the market is something encourage-bale to share with everyone. - The main resources the organisation use for knowledge sharing is intranet that contains all of the document management, company magazine that is part of the intranet as well, and mail announcements, laptops, internet, personal phones, office phones, and meeting rooms equipped with projector's, TV screens, discussions, chatting, and asking experts, enterprise resources planning (ERP). Also, Spark rooms, Jive sites "Employee	monthly meetings to share customer's success within the organisation and each team member will share their success stories and produce a level of training outside the employees broadcast to improve and encourage new ideas.	more likely for a chat room where everyone can share his/her projects and ideas. However, some resources the organisation use for knowledge sharing are online courses and training. Nevertheless, sharing knowledge with colleagues is a problem within each department because each department has certain tasks and the lack of knowledge communication between them is a conflict the organisation faces.

	Community", to capture our feedback, share major organisational updates and enhance collaboration with greater transparency in addition to that, we have a Knowledge Management Repository via Sales Force.com where all we need is uploaded and accessible to all employees. - Encouraging knowledge sharing through monthly workshops conducted by specialists, we have weekly meetings to get the team along and knowledge sharing is always on our top lists, as the business would not progress with knowledge hording. In addition, adding all of the success stories and the problems in the organisations systems is one of the tools that helps in knowledge sharing.		
Technology Support (TS)	-High standard of technology support since it is an IT organisation, which, helps in minimizing the cost of employees travel from one location to another to complete their daily tasks. In addition, the high technology support, new information and new market trend to keep it updated accordingly to the markets for the sake of knowledge sharing purposes. -Tools used for knowledge sharing such as emails, phones, Microsoft communicators, web conferencing like for	-The rank of technology support is not very high in regards of financial support conflict. However, tools used for knowledge sharing such as share point, link service (Skype for business, audio, video, emails exchange and a shared folder to share information).	-Some organisations has a low rank of technology support, were emails are used as a major tool to enforcing an order to employees, others has limited access to the database in which it depends on the level of employment and type of department for security reasons.

	example (WebEx), Spark rooms, Jive site, Sales force, Jabber, and are all available on desktops and mobile apps. -Electronic storages used to access data were the database exist through cloud storage models for example one drive. -In addition access data in three ways to make a backup: 1. Hard drives physically to store data 2. Shared storage space that we upload the video based information on it 3. Upload data to I-cloud. -However, some organisations has an electronic system to store and retrieve data' others are equipped with artificial intelligent were you sometimes ask a machine and the machine will answer your question.		

Table G-2: Knowledge Sharing Types (KST) Rubric

Sub-Factors	Ratings		
	High	**Medium**	**Low**
Explicit (E)	-Sharing knowledge through discussion done with a managerial weekly meeting, which is relatively easy to share knowledge between co-workers.	-Sharing explicit knowledge through discussion is considered optional, through workshops and brain storming sessions but not in a specific area or platform.	-It is not considered easy to share knowledge between co-workers because of the culture change, others depends on the type of knowledge or information being shared.

Tacit (T)	-Tacit knowledge sharing is developed through human experiences but it all depends on the individual in order to learn, gain and give knowledge they know to one another. -Some believe that tacit knowledge sharing is developed through IT experience because it's based on situations, were there is a problem solving it is usually through life experience and work which is shared by co-workers. Trial errors is another way of getting everyone in a group to discuss and try to solve it; since everything is documented, it is much easier to access data. -Limited awareness of the tacit knowledge sharing depends on the individual's personality. Others use a learning management system for awareness sessions. However, some organisations has no limited awareness for knowledge sharing were they are based on both trust and knowledge sharing for its main success factors.	-Tacit knowledge sharing is gained through human experience but for some need to implement a system for sharing knowledge but at the end, it depends on the type of organisation and also on the culture of the organisation. -However, others believe it depends on the situation if it's a customer or certain implementation or tools, yes it might require experience; otherwise it might not need experience. -Another significant factor related to trust issues if the individual is threatened by others success. -There is no limitation to use the organisations portal to use the information for projects. However, it depends on the individual himself if	-Tacit knowledge sharing is developed through educational experiences but work experience is something the organisation lack and it depends on the individual's willingness to share knowledge or not. -There is no limited awareness for knowledge sharing just simply sharing is not done because lack of interest.

		she/he is willing to share or not. -Sometimes, it depends on the knowledge it is a customer information, certain consents should be taking care off before sharing any knowledge.	

Table G-3: Knowledge Sharing Approaches (KSA) Rubric

Sub-Factors	Ratings		
	High	**Medium**	**Low**
Codification (C)	-Significance of documentation for knowledge transferability is highly considered using case studies to give a brief scenario about the issues and its problems and how it might be solved. -Documentation through minutes of meetings for projects, when it started and ended, which projects the employees worked on and which ones he/she did not as well. In addition, statistical data for successful project and things that includes lesson learned for products and	-Documentation for knowledge transferability depends on the knowledge being shared if it's a meeting with a customer documentation of everything in the meeting is considered, otherwise if it's just a brain storming session and sharing ideas documentation is not considered. But, documentation is significant to help employee's continue were they left off or if that individual no longer works in the organisation.	-The organisation does not use the approach of documentation but they hope they do use it for future references and back-up. However, there is no capacity for co-workers time to embrace documentation of knowledge.

	projects that failed. In addition, of losing customers because of bad customer service, that is why it is significant to consider customer centric. It also help for future use and referencing for problem solving with colleagues in the organisation.		
Personalisation (P)	-Personalisation is considered significant based on a training program that verifies the path of employees based on assessment on the beginning of the year and based on the results. In addition, personalisation takes part in the training path, through the organisation website, which is only accessible through certain employees for accessing this private or confidential data and certain departments or users have certain access for information that have access to only there partners or customers. However, in terms of personalisation, there are tools that can help and support them in accessing the information, knowledge they need, and its availability in the portal.	-Personalization is a significant tool for transferring knowledge for groups in order to help with communication in the organisation. However, it is hard to personalize because of its high expense and it all depends on the need to use for knowledge sharing.	-The organisation does not consider personalisation.

Table G-4: Knowledge Sharing Process (KSP) Rubric

Sub-Factors	Ratings		
	High	**Medium**	**Low**
Collection (C)	-Sharing information with colleagues to the full extent and this is common in the organisations environment and does not have to be officially made through a casual sitting in the office it is with an open discussion. In addition, employees do share information when they are asked and share knowledge from their past experienced based on projects that has been executed and completed. Other organisations share information with colleagues and are considered very transparent, were they rely on each other's achievement; a member's success or failure is dependent on the entire team as a one achievement.	-Learning new information is considered hard in the organisation because the lack of spare time and the consideration of priority. Also, sharing information with colleagues depends on the ground of trust we have between employees.	-Sharing information with colleagues depends on the individual, department and the projects itself, and how relevant the individual is with the project or task and at the end it all depends on the personality. -Direct team do share information with their colleagues but sometimes when whether they are knowledge owners or people whom have the knowledge of interest are from outside teams they might not be aware of the importance of this knowledge accordingly, sharing the knowledge might be of lower priority.
Donation (D)	-Learning new information through the	-Learning new information most	-Learning new information are done

	donation of knowledge is highly considered within the organisation to develop a knowledge environment between one another.	probably to capture the knowledge in which will help in increasing the employees performance.	only when asked and at the end, it all depends on the individual and his/her personality.

Table G-5: Intellectual Capital (IC) Rubric

Sub-Factors	Ratings		
	High	**Medium**	**Low**
Human Capital (HC)	-Investment in human resources through training, coaching, mentoring, supporting fresh graduates with a technical or business path. Every employee has to go through a certification path for on the job training because the business is very dynamic and always in a non-periodic timing, mandatory incentives (such as payments), and scholarship program if someone wants to continue their education. Since, human resources is the most significant asset of the organisation.	-Investment in human resources is a medium level through training both soft skills and technical skills, fun activities to break the formality, celebration when success and appreciation of efforts are done.	-The organisation concentrate on certain training and investing in human capital for more efficiency to make employees feel valued by training and funding and making them gain self and carrier development.
Structural Capital (SC)	-A structure reporting system is a tool for employees to complete their tasks, which can measure their performance and efficiency using (KPI's) key performance indicators that drives revenue to the organisation. -Productivity tools, internal applications, emails and reports are used to help employees complete their tasks human interaction more than	-New tools and portal development for the employee's use to complete their task is not an oriented mechanism.	-The problem is that the organsiation depends mainly on creativity and we cannot have a system or criteria for employees, which has to complete their daily tasks.

	automated systems to complete their daily tasks.		
Relational Capital (RC)	-Monitoring long-term relationship through building trust, weekly and monthly meetings, with stakeholders the responsibility with higher management and with strategic partners it's a strong financial relationship to close deals. -Others believe that monitoring long-term relationships with customers and stakeholders through large conventions to keep up date with the latest products and services. However, rebate programs are made for strategic partners to keep up to date with technology and help with training for both technical and business level.	-The organisations customers are divided into business and individuals in which are being monitored well. -Monitoring long-term relationship with customers, stakeholders & strategic partners through annual events and invitations. - The trick is to propose long-term and short-term project at the same time so they would be hooked and looking forward to work with us again. - Monitoring long-term relationship with customers, stakeholders & strategic partners through giving the lead to more than one account manager and fallow up with them every quarter and every year involving the business development team inside the account.	

Table G-6: Organisational Success (OS) Rubric

Sub-Factors	Ratings		
	High	**Medium**	**Low**
Operational Performance (OP)	-Evaluating the organisational success by achieving the revenue KPI's that are set time, value, profit wise, based on the customer satisfaction, which is an indication of the organisational success. - Achieving deadlines, recurring clients, maintaining employees (no turnover), not having problems and obstacles by having a peaceful culture. In addition, expanding operation inside the account every year, using the account manager strategy and business development strategy were projects are being extended outside the account. Moreover, maintaining an extremely well structures business processes including the operations essential part of it and this how it keeps the organisational structure very well processed.	-The organisation reached the Kingdom widely were the highest population of the community are using our services. -The operation of the organisation is based on a technical team that is fully occupied with work through a squeezed man-days for better efficiency. - The simpler the process the more	-Operational performance is not successful and not efficient because of products are not available which leads to customer lose. Some products have bad quality, which leads to low performance of customer service. Another issue is high waiting time for customers at the cashier because we lack an online service for customers to order from home.

		successful the organisation would be.	
Financial Performance (FP)	-Evaluating the organisations success through generating profits needed in the right time and the organisation is considered excellent in their financial performance. -Getting projects with different profit margins as long as it is not an expense for the sake of financial stability and good references and experience. -The main objective is the company meets its annual financial goal and growing market share, which is satisfactory for the shareholder and indicators for the financial performance through profitability, growth, value per share in a year, achieving expected targets, and maintaining low growth every quarter to make it very steady instead of having a high growth from time to time.	-Making profit and keeping the equilibrium stables for its financial performance.	-Deep financial trouble because over spending, and have expanded rapidly. Therefore, we could not maintain the quality, turnovers of employees is high due to low wages and the company have invested in other companies that are not performing well in the market.

Appendix H

Thematic Analysis for Survey Questionnaire Open Questions

Open Q1: What type of organisational problems within knowledge sharing and knowledge transfer do you have?

Q1 Answers Summary from Survey Questionnaire:

- Since it's a competitive environment, knowledge sharing is not very common as employees don't trust each other.
- Collaboration, high turnover.
- Scattered sources, the need for consolidation.
- Conflict of benefit's.
- Scattered success of information.
- None so far.
- There are no problem's and the organization provides the relevant tools.
- Nothing, none, none.
- Lack of availability in one place and easy to access, no clear map for employee's training and knowledge.
- Lack of tools (social collaboration tools), lack of investment in training, leadership engagement.
- In my role, I don't have any, but I've seen sales representatives who have revenue quotes and sales compensation package. They sometime seem to be reluctant in sharing knowledge about their revenue accounts.
- Some of employees is feeling bad to share their problems and the company is giving them their full support.
- High internal competitiveness as a result of company structure across different line of business.
- There is no support or collaboration between all of the departments.
- Weak departmental collaboration.
- Finding the right source.
- Knowledge sharing is engaged and tools are made available, the only challenge is having much individuals make use of these.
- Not a lot of people are willing to or have free time to share their knowledge.
- If the information is not available, it takes a long time to obtain the negative information.
- There is no clear compensation on this within the organization.
- Being busy with lots of tasks.
- Employment trust.
- Lack of communication & employment trust.
- Some employees have bad attitude to share knowledge, however so do we share without a checklist or approval.
- 1. Lack of knowledge 2. The perception of having knowledge were people don't want to share the knowledge because they believe that will lose competitive edge of others.
- The classification of employees.

- Staff motivation to share and implement new ideas.
- Most often people tend to restrict knowledge sharing due to job instability and this causes damage while taking over and enhancing the system also to support.
- The mentality across the organisation.
- Some of the (non-Saudi) staff don't like that because they think we replace them in their positions with (Saudi's).
- Turf mentality, lacking reward/motivational structure.
- Lack of transparency of information between management and co-workers.
- Fragmented technology landscape for collaboration tools.
- Knowledge sharing is from my perspective is making information accessible and available for anyone to learn. There are two aspects for the:1. good platform 2. And method delivery (reports, care study's, etc.). I think my organisation needs to improve in both.
- Tools to update knowledge sharing content.
- As a consultant to KAUST, we have least or no access to any knowledge sharing tools and repositories.
- Sometimes it requires allot of fallow ups.
- I am not, it's entirely at my discussion.
- We do not have a central repository for storing knowledge. Information is scattered across multiple systems.
- As my company serve as manpower where different set of skills needed to specify department so as an organisation there is no such set of employee's club into one category where knowledge sharing exist. The company having concern the post of manager they made from one reserve, not knowledge sharing/transfer.
- No direction from management to do so.
- Not everyone first language is English, so a lot get lost in translation.
- Administration, standardization of updating maintenance (governance).
- People are not willing to collaborate, and people are not willing to try new technology.
- Willingness to share, personal and organisational motivation to share.
- Some staff are willing to share knowledge or propose innovative solutions, few can "think out of the box".
- A) lack of communication between colleagues. B) No platform for employees to interact with one another. C) working individually.
- Insecurity.
- Resistance to share.
- None, we don't have any problems, we have a teamwork website to share the knowledge & transfer it between teams.
- Problem of sharing between departments.
- The chain of authority is too long, which causes misunderstanding when it comes to reporting and knowledge sharing.
- 1.The time is less to meet 2. Less resources.
- No time.

- Most individuals lack interest in enhancing their knowledge which I consider is a major barrier to knowledge sharing and transfer. One of the reasons for this lack of interest can be due to lack of a reward incentive system.
- No full management support.
- Being a small company we are pretty open and collaborated.
- Miscommunications between different departments.
- Collaboration can be better.
- There is no problem of all are aware of the working sales & this will make a positive part.
- Nothing, all my team members sharing knowledge.
- No problem.
- No issues, All staff is sharing knowledge & experience they have.
- The different cultures between Saudi people and the others.
- Up to date information.
- Sharing business information into that important of implementation plan.
- Culture.
- Sometimes the connectivity to remote desktops, declarations (make it slower) for knowledge sharing and deployment.
- Retention of data and info from post projects with individuals is poor (machines get lost, stolen, or formatted after departure), Some language barrier, as many colleagues are not proficient in either Arabic or English.
- As the organisation built on Chinese culture, sometimes I found language barrier, translation issues, especially the technical part.
- In content of progress, for sharing ideas I am satisfied with knowledge sharing is somewhat limited to an extent of work relevant only.
- We don't have any issues nor challenges.
- Knowledge transfer.
- Very motivated to share knowledge.
- The tendency and the 'trust', also issues regarding the vision and the profitability.
- Time allocation for knowledge sharing sessions.
- Lack of training and workshops.
- Large company are complex so can find it difficult to share all the knowledge.
- Different aspects of people, currently, we just started a new initiative which is concentrating on knowledge sharing with rewards to motivate all members, so this initiative will resolve this problem.
- Reaching to the right resource.
- Change management and culture change is the biggest obstacle in such cases.
- There is a system to share the documentation in the company.
- The problem is no documentation is gained during working hours.
- Sometimes knowledge transfer between high level is not something considerable.
- Evert department keeps its date private to avoid mistakes being exposed and for certain personal benefits in which guarantees keeping jobs.
- Motivation of time.
- We don't have any problems.

- No documentation, the sharing knowledge through verbal communication.
- Online database, surveys.
- The different divisions within the organsiation can act sometimes in silence, which can be an obstacle in sharing knowledge; the discipline of employees to use the tools can be the reason preventing the knowledge sharing.
- Information capture & cataloging as well as creation before putting it in a repository.
- Coping with continuous change.
- Need more video conferencing for collaboration remotely.
- There is no problem.
- Lack with enthusiasm from others, need for dedication from teams to hunt + share information.
- The main problem is that not all the staff is using the provided tools to share knowledge. Only few members of my organisation is using the tools.
- Microsoft Yammer.
- Communication skills like language.
- There is no problem in knowledge sharing in this company.
- There is no career improvement plan available to employees.
- Knowledge sharing and transfer is only accomplished on friendly basis between colleagues, organisational culture doesn't focus on or encourage collaboration for sake of impact or efficiency, signaling by (finger point on time, fallow burecractic systems, send emails, lack and forth with no actual outcomes) that work is being done is much more important than actually doing work, status que is everything.
- We need more trainings and meetings of new related technologies.
- Not encouraged or supported by management, no technology issued for collaboration & sharing.
- Someone to be dedicated to update and monitor latest technology.
- No issues.
- No problems.
- No problems.
- No issues.
- No problems.
- No issues
- On boarding, weak knowledge transfer, ongoing between departments, weak knowledge at different focus, on retirement, fast and weak hand over, over all lack mentors of multi-tasking.
- Different priorities for each individual can lead to bad knowledge sharing.
- Trust, I think we need more trust from our company.
- The time
- No problems.
- Encouraging problems to do it put in a clear procedure/system or program, clear KPI out of it.
- I do not think we have this kind of issues.
- Lack of understanding what is being shared, the purpose of sharing the knowledge, the interest among others regarding the information shared.
- Some of the learning content is paid and is choice for use.

- The extent of knowledge sharing between employees' from different functions needs to be improved.
- Some resources try to keep the knowledge they have for themselves. They feel threaten if other people has the same level of knowledge of some areas of expertise.
- As we are a private company, we do not have any issues.
- Amount of time available for employees.
- As we are a private company, we do not have any issues.
- The largest problem from my perspective is language, the company is originally German and the head quarter is in Germany so most knowledge is stored one way or another in Germany.
- Some of the learning context is paid and is locked for use
- Transparent
- Knowledge sharing within the team will improve the team work
- Applying the knowledge received as recipients, challenges for employees to share their knowledge feeling competitive.
- Required more team builders for the employees
- Forgetting to share or lowering it importance
- I don't have information in proper time, I need to ask about policies if change or updating, I received the information after I am facing issues related to and always when we ask to improve our financial situations we are rejected by the poor budget argument since 8 years ago.
- No problem regarding this issue
- There is no knowledge transfer process
- There is no sharing structure
- Not been on the same boat in which we must
- Transparent
- As a good organisations specially that we are still on the beginning (not complete 10 years)
- Small group should be conducted to share knowledge
- Some people still have sort of resistance to share knowledge willingly and proactivity
- Multiple tools are used within each division, making it hard to follow up or track data. In addition, some information are shared with wrong people in some cares. In addition, I sometime notice that people share information via what's app groups! Which is not secure at all but they do it because it is easier and reliable.
- Documentation, building knowledge sharing portal
- Toom many information and too little time
- Culture norms of a big group in the company is slowing down knowledge sharing out of fear of job security!
- Just a few individuals mentality
- There is no written procedures, all are personal efforts
- Individual perceptions, personal control
- Security versioning, time management & responsibilities
- Nothing specific, we use sincerity to share and access information
- There are no problems
- Change management with new program implementation and software

- Scenario planning prior to defining business requirements with the organisation
- Regular sessions for increasing knowledge is missing
- There is no problems
- There are many departments and all of them have different targets. There is a lack of communication between departments especially when we open new stores, marketing, commercial, supply chain, operations, and new stores. Dates of the stores opening are not updated and shared properly between key personal
- Insecurity of losing job if knowledge shared, knowledge sharing process/documents preparations, training etc. requires good amount of time.
- In some cases the team feel in secure sharing knowledge on time constraint not enough to share detail
- Personal issues
- Communication with operations is difficult
- Sometime there is a lack of knowledge the employee and to direct the good to the company and the fast of the whole company
- No it depends on the knowledge being shared and transferred and there is no tool for experience (cumulative)
- Personal interference, groups during projects

Open Q2: How are you motivated to share/transfer knowledge within your organisation?

Q2 Answers Summary from Survey Questionnaire:

- Live session, weber, email, what's app groups, portals.
- Personal, company objectives.
- Normal.
- Medium level.
- Appreciation, team work, regular sessions, knowledge sharing.
- The motivation is going self-esteem and recognition.
- Highly motivated since it might add some values to one of my co-workers.
- By Awards and special meetings.
- Very motivated to do by 1. sharing materials 2. Do presentation sessions.
- Making difference, moral.
- Company is very dynamic, nobody is perfect because policies, practice very frequently updated. We have weekly team meetings to discuss changes, and benefit from one-another experiences.
- Through positive feedback.
- I'm motivated to inspire and use my experiences/ knowledge lead the team for a successful customer engagement.
- Work by my own, no support.
  Self-motivated to show experience & knowledge sharing information, knowledge and experience is empowering & enriching both to the source & audience.
- When there is value in what I'm sharing.
- On job training.

- I am reasonably motivated to share knowledge. I believe 30 minutes of sharing knowledge based on experience is equivalent to many lessons of learning things & then medium.
- Very motivated if I have the chance.
- When colleagues chase interest with the support from the manager.
- Very motivated through proper planning and a clear process.
- Reward of management & corporate system.
- Linking information between employees.
- Optional online sessions, enforced sessions.
- No because, there is no clear confrontation for there.
- Highly motivated. I do believe in the power of sharing in building trust & conversation within the organisation.
- Corporate.
- Good.
- Yes, very much.
- We have a friendly environment.
- All employees of our organisation are very open minded and have a positive nature towards everything.
- Should start from top management, monthly meeting for all employees.
- To solve with sharing issues/problems.
- Not too much.
- I am motivated to share knowledge when people collaborate with one another.
- By email, multimedia, lecture.
- By self-motivation to create positive relationships with colleagues.
- By knowing the added value and benefit to the department and the organisation.
- Knowledge sharing is an art, it is not a stumble block to growth personally instead helps in gaining knowledge, I have personally trained people with the knowledge that I have gained over the years and things has helped both mutually.
- Sharing as required and as appropriate.
- I'm very motivated.
- Personally I feel there is a huge gap in motivating for knowledge sharing.
- Yes!
- When I learn something new, When I receive good/bad news.
- By arranging knowledge transfer sessions with colleagues.
- These should be mandatory sessions scheduled precisely to share the experience.
- The motivation comes primarily from the objective to complete a given task with coordination from other colleagues.
- No as a contractor expert to fill requirement by contracted company, if welling to proceed letter with career oriented, need to learn on your own 7 try to find suitable role as per skills & requirement.
- Very motivated.
- I don't get training.
- 1.Influence 2. Exposure 3. Coaching responsibilities.
- My personal desire is to help others.

- A) peer application. B) Ideas recorded through external forum C) Ideas recognized through successful proof of concept.
- Sharing knowledge reflect positively to my experience & learning as well as the organisational community.
- Some by force, some are willing to share.
- The principles that I fallow are considered motivation for knowledge sharing.
- By seeing the result of knowledge transfer.
- No problems with the organsiation it is just a behavior problem.
- I do.
- The environment in my organisation facilitates and welcome knowledge transferring and expertise sharing.
- We have to be one team with full power to get success.
- It is highly likely for colleagues to share information in an interdependent environment.
- We have fun group tp transfer our ideas and knowledge.
- All are motivated & really for these share the knowledge in the company make the positive impact.
- I don't hesitate sharing my knowledge and work experience with my organisation.
- Good.
- I share all my experiences with my colleagues.
- Moderate.
- When my colleagues open the same discussion.
- Very much so.
- Regular meeting for knowledge sharing, awards.
- Corporate keep motivating and encouraging that.
- I like to share knowledge with my colleagues and if I gain new knowledge I get motivated to transfer to others in my organisation. Also, if I learned a new course I would give them results of what I have learned.
- Because we are one team and need to be analyzed and need to have good internal communication to deliver the same message to the customers.
- In order to be welcomed by others to get knowledge/info from them, I believe it is important for me to share what I know, and is generally a norm inside the company.
- Languages and culture different communication with management that don't understand our methods and regulations.
- Through my experience and from learning and sharing from each other's new cases and incidents.
- Sharing scores, levels, support promoting through case sharing, and knowledge transfer.
- I share my experience in meeting with colleagues in both formal or informal meetings and share how I found the idea and the end result.
- Motivation comes from sharing knowledge with one another based on a reward system (financially, KPI for the employees, promotions).
- Tie it to the annual evaluation.
- I am always motivated to share knowledge what I have learned with my colleagues within the organisation to work in harmony with them.

- The motivation comes from knowing that my knowledge will help others and it is considered as a favor and others would help me in the future.
- Our work spirit.
- My organisation just started a new initiative for sharing knowledge, by this step any employee who has a knowledge can be shared, he will gain points and rewards all this mission.
- Ok good.
- Sharing and transferring knowledge helps a lot in team expertise level enhancement as well as in the delegation process.
- Not in all department same of the department there is good knowledge share others there is not.
- Very welcome to participate to share or transfer my knowledge.
- Frequent gathering outside workplace, short meetings.
- Verbal (Moral Motivation).
- Share with members any new knowledge learned.
- Company plan.
- Verbal.
- First managers and team leaders should earn the trust and respect of their employees, I share important ideas and problems with my team and I want them to feel valued.
- Enriching the team with knowledge exchange, give back and ideas.
- Rewards (cash, trophies0, recognition and leadership.
- Contribution to others is one of the 5 elements of culture.
- Developing good reputation.
- Information sometimes is hard to find, too many sources of data.
- There are special digital awards of badges as well as mentoring 7 coaching is a carrier progress requirement.
- I think it's something I love doing and passionate about.
- I would like to describe this as a personal behavior rather than a corporate culture.
- I am motivated to do this with the team during our review meetings, yet not satisfied with the level of knowledge sharing as is could still be improved.
- Career growth, building my personal brand.
- 1. Honest2.helpful3.good communication.
- I love sharing knowledge.
- When the need arises or when the opportunity is highlighted. When exciting information is received that can be of benefit to all.
- As my job role is to increase growth of our company business it motivates me to share knowledge with my team because they more I transfer the knowledge the more my team can me the customers happy which will increase the business.
- Any successful project, being big or small has one thing at its core effective collaboration, and you can achieve it with knowledge sharing and I love sharing knowledge.
- Providing the tools.
- Super.
- Communication motivates speed.
- Not motivated.

- Only on personal basis between colleagues & work friends, sharing and transferring knowledge isn't acknowledge, rewards, encourage by the company.
- Pure self initiative + handover to main task for my vacation.
- Very motivated.
- Very motivated.
- Very motivated.
- Very motivated.
- So motivated.
- I am ready for any knowledge transfer.
- If the environment is helpful for sharing.
- Medium.
- Arrange training, learned lessons sessions after projects
- Trainings, lesson learned after projects
- So motivated
- I'm usually motivated to see others improve, however the focus on target make this difficult sometime and consume more time to transfer knowledge separately to each colleagues.
- Management can lead to this concept to become an attitude.
- By do my work with attractive way, make suggestion to others.
- By sharing my new knowledge.
- Do my best.
- By seeing the effect and some results out of it.
- I don't have any problem to share my knowledge and I think sharing knowledge and experience is important to accelerate the work process.
- Success comes when knowledge is shared using best practice is important to change behavior's and to reach desired out comes.
- Yes, it is a good organisation for knowledge sharing.
- Hence it is IT oriented than dynamics of industry changes are quick which implies a culture of knowledge sharing.
- The matrix structure of the organisation motivates employees by design to share information.
- To get recognized as a great team member, feel the satisfaction by helping others, get promoted by recognized as a manager candidate.
- Fully motivated.
- Knowing what your have to give back
- Fully motivated
- I have a KPI that is part of my success matrix which includes the number of thought leadership items that I develop on yearly basis. The sharing in department of this item is counted towards progression of the KPI.
- We are encouraged to share and transfer our knowledge.
- Yes it is a good organisation for knowledge sharing.
- By schedule to get any additional knowledge which present to share in broad way.
- Once get new training on latest technology, sharing in caring, and best to get more knowledge.

- Very motivated.
- Acknowledgement, recognition or accreditation.
- With our good work experience and better team building a training program
- Implied but I don't recall it being mentioned
- Very motivated to share and transfer the knowledge, it helps me and coworkers to solve problems fast
- I don't have a problem to share my knowledge
- My interest and passion in my domain motivates me
- We must all know we are the same boat, as our aim as a company is one
- Sometimes
- If the environment culture has sharing knowledge culture
- I believe in accumulating organisations knowledge of experience, so I am very motivated about it
- By including knowledge sharing in our yearly goals, which affect our yearly salary increase if it's not in my goals sheet, I will not hare information. As the value of the employees is weighted by his knowledge and experience.
- I am always open to share my knowledge of work experience with any of my colleagues or within the organisation
- Meeting with the team to review & share experiences & knowledge
- Employees is requested to update the related documentation to a special outline tool, which can be accessed by his colleagues.
- Yes and I encourage others to do it
- Direct assignment or volunteering in quarterly web-conferencing dedicated for team sync-up
- Using internal portals
- There is no clear motivator , the team spirit and the well to share
- Promoting the knowledge sharing habit, assign this as knowledge practice , reward & recognition
- Part of my measurable performance metrics is to access collaboration and knowledge sharing getting lesion learned across my mates
- Very motivated and we have regular sessions within the team to share best practices
- Some skills or technologies that seem to be helpful in work and interesting now
- It is part of the job to do knowledge sharing to active derived result and to delegate tasks among team
- Through workshops, training and seminars forums of meetings etc
- I'm very motivated + don't hesitate to share any info that I know
- Good
- I share techniques on all of my successful project, and learn from mistakes and improve work process
- Throw presentation or reports during meetings
- Team work, growth, promotion, opportunities to grow that encourage people to prepare next in command to take over by knowledge sharing
- I mostly do self-motivation in sharing knowledge to improve my work experience and have rehearsal and practice
- Must be I have communication with my line manager

- Whenever there's a project or I am asked
- Usually by sharing results, thus explaining/sharing have to achieve them
- I am open minded and should be to share knowledge with my line manager and team workers and learn the experience & knowledge that they have to value more
- No specific motivations are used its just personal motives
- It depends on the project and people
- By group discussion , training and presentation

Open Q3: How do you evaluate your organisations success in terms of operational and financial performance?

Q3 Answers Summary from Survey Questionnaire:

- Great. The company has strong presence in IT, mainly software products & if that enable it to lead the market in the specific field.
- Our organisation focuses on digital transformation expecting great success in future, we are helping customers all across the world to perform better in digital world.
- Stock market, quarter reviews, numbers.
- Very high.
- I believe it's fairly good compared to the industry.
- We as oracle engage the right experts to ensure you get the value you expect. We provide advice on products and architecture and connect to the right people at the right time.
- As it is a global organisation, it's always running to achieve the goals in terms of operations and financials. The performance of achieving those goals is high and always motivated by the upper management.
- 10/10.
- My organisation performing efficiently and has made profit due to the strong tights with the customers. Also, making a good reputation since it has a very good reference in the market.
- Increase by revenue year after year, they are the leaders in applications and technology.
- Very good, very good.
- Making yearly targets, healthy growth in revenue, smooth restructures & transactions to new domains.
- Low performance in operational level. High financial performance.
- Very successful.
- One of the best companies in terms of performance in the century & the region.
- Zero!
- I believe that my company is well established and its organisational structure is successful & financial status is solid and also profitable.
- Great.
- Organisaiton is focused on customer challenges and address these through our products and solutions.

- Apparently as listed company in the NASDAC and NYSE, my company is creating profit year after year. However, their needs to be reflection on employee's constant development and solutions.
- Excellent.
- 5.
- Above expectation.
- Good, very good, good.
- The operational performance is fairly excellent.
- Very high, we maintain small but constant growth.
- Very successful.
- Perfect.
- Very good.
- Very successful.
- During the current situation and financial situation of this country we can see that our organisation putting all the effects to control the financial and operational performance, although we are suffering to manage the financial situation by doing all the possible to reduce the cost as comparing with our competitors our organisation so far succeed to put us on the right track.
- 1.We have a good and best business progress 2. We have a good earnings and business proposes.
- It is fair.
- The operational structure is very successful cycle in our organisation as per financial performance we stand for from all organisations.
- Very weak.
- Needs improvement.
- Operational wise we are very inefficient and there is allot of room to improve. Financial wise it's not applicable because we are a public sector.
- Good.
- Since we are non-profit organisation ROT is still not being a strategic goal to achieve. However, operational our organisation is considered faster than other competitors in the same industry.
- We are a new still out of the investor compared to the peers, we do not rate ourselves internally but, questions wise we rate our-self as good while still evolve to make it the best.
- Our financial performance has a strong growth, and slow/weak operational performance over the organisational level.
- With all constrains we have, we are doing ok!
- Since start up organisation we are at medium stage of operational and financial performance.
- KAUST has been one of the best universities in the world. However, this has to be arranged and planned nicely. People need to be gained to have smart specific resources, achieve realistic (time bound) objectives.
- Fairly effective.
- It's an educational establishment so profit loss is not consideration.

- Our organisation is mainly focused on efficiency of our performance and less on the quality of work/solution being provided.
- Art of communication affectively & cut to reveal only reputation which they wish to both operational & perceived into kept with themselves & facilitate employees to the best possible manner in terms of financial issues or operational issues faced by employee.
- 3 out of 5.
- Operational performance: our institution is young, thus it is very much a learning institution but for a young institution, its operational performance is quite advanced.
- We don't generate profile; we are a university unit.
- One of the top KSA organisations were its operational capability and its financial aspects are a non-profit.
- Good.
- It is difficult to answer this question being in academia.
- I evaluate it 80%.
- 7 from 10.
- 60%.
- Some operational problems couldn't be faced very often due to team's sizes but our company is financially stable and growing.
- Great job has been done last years, so it's one of the best.
- Successful but not that much.
- 70%.
- Stabilizing gradually.
- Excellent financial performance, operational performance need enhancement.
- Good can be better.
- Proper planning of large team groups makes the operational success. When the proper goal the financial goal also affective.
- Very Good.
- Excellent.
- Our key of success is our support & quality of service, due to this we are keep growing every year.
- Through the tools that have been provided to us, our customers and partners.
- Excellent performance.
- It's in the right track after two years of struggle.
- It is very profitable company, going into the right direction.
- Very excellent because of the high efficient process and system that organsiation fallows in order to reach its success.
- The organisation system is very organized, high level of trust, were they have time sheet that each employee has to fill this time sheet.
- Operational: If the operations process is easy and simple that an enabler for the employees to be more productive. Financial: we done commit to any investment unless return is 40% of returns on investment and they manage to make their employees happy and loyal they have full hands in keeping their employees happy.

- My company is a young company in KSA and globally, however I think that we have made great progress in competing in the different industry verticals with bug players who have been in the market for a significantly longer periods of time.
- It is one of the best organisations that I have worked for, they care about the employee's as much as they care about the customer's giving us a chance to enhance our knowledge and experience.
- Doing well, revenues ranking first, but profit some less to competitors, revenues is less than others.
- Company is growing at an efficient role and this maintained the good will compared to the key competitors. Progress is steady and adaptive of the carrying rules and very aggressive in maintaining the quality of services and products.
- We are expanding stage so we spend a lot so ROI is taking longer time for this stage.
- Operational is extremely good, financial we have a constant growth year after year.
- It's very important role and contribution for both operational and financial performance for the organisation.
- Very good operational goals and progress but weak progress financially so far.
- Not bad "Good".
- The financial is very high. Last year we have closed the year with 12% over achieved and the same goes for the operational performance.
- I evaluated company success by creativity an alternatives operational environment that can support financial growth.
- Doing great with the new CEO vision and transformation branch.
- STC transformation.
- It is very good because we are focusing on our vision. So we are doing well.
- Agree is ok.
- A quality deliverable + better team laceration.
- Most successful out of key competitors.
- Our organisation is on leading organisation in the reason and have the firm basis of operational and financial performance. The model is erupting with the state of the art of KPI and measurement model.
- It's very good than other companies.
- It is better than any key competitors, operational success is good, financial performance is excellent.
- From operation: need more consideration on speeding and meetings KPIS.
  Financially: market very competitors with fair performance but need more investment on improving crossing levels.
- Very successful.
- Operational performance is very good as well as financial. '
- Very good.
- Strong one of the largest 20 companies in middle east.
- Not good not bad.
- It's a successful company.
- Successful company.

- Comparing the results of initiatives to objectives and evaluate to how extent we meet our target, Using financial indicators to evaluate company growth and business performance.
- IBM is probably the largest and oldest IT Company in the world & it had its difficulties. Now days, IBM is going to a big transformation which is affecting its growth. However, revenue & profits are still healthy.
- Employee retention, market share and growth rate year on year.
- I would evaluate my company as very good, considering the transformation we went through.
- We are going through a transformation & restructuring phases mostly to enhance the financial performance where we struggle.
- 1.Hardworking2.value of customers.
- Overall, the financial performance is good but due to financial crisis in the region, companies are cutting down IT expenses.
- Company process should be strong enough to be affected by people; financial success is when a product/service development cost has been recovered.
- I think at the current market situation our company operational and financial performance is getting better.
- The financial and operational performance of my organisation are fairly good but due to the present financial crisis in the region, organisation and many other companies tend to cut down the IT expenses.
- Doing well.
- Not as we expected.
- Operational: need to build a strong team, promote employees to workshops, and improve productivity efficiently of employees. Financial: producing overheads like travel expenses, more funding to the business.
- Regarding it meets more development because of lack of communication and hierarchy.
- Very good as an organisation.
- Monumental inefficiencies & wasted resources and potential, growing cash flows problems having bigger debts, no solid action to solve it, just signals & impulsive rules, resting on status quo, catastrophic failure when up against senior competition.
- Steady growth.
- Good.
- Very excellent.
- Projects closed in a great time frame, growth by 25% every year.
- Successfully.
- Very successful.
- In a range and it's a good growth.
- It is doing well, and need to be growth.
- Very successful.
- Have a good performance.
- In a good growth.
- Successful
- Successfully

- Very successful
- Operation: SWAT, Financial: cost V.S revenue.
- My company established in 7 years back and keep growing in terms of operational and financial performance and keep motivating the employees.
- Most great of my company that awe help each other, I think we have a good company.
- Very good.
- Very good.
- It is improving.
- Going better.
- Growing and improving but very slow.
- Its is good
- We are in great position financially and about operational we have done successfully so many project around Saudi
- Our organisation can perform better than our current result if they change some aspects of business dealings.
- Bottom line can be improved allot by reducing roaming charges for mobiles.
- Considering financial statement growth in both operational and financial performance is above average.
- Revenue growth, profitability, customer success, employee's engagement.
- Internal process are killing the business, as sales we struggle internally more than we do with prospects/partners/or customers.
- As SAP we are a successful company
- Good quality of products and low cost.
- We are considered a very successful company.
- One of the largest companies in the world. The top IT Company in Germany. One of the most valuable brands globally. Revenue excessively 25 Billion Euros' annually.
- Good
- Bottom line can be improved a lot by reducing roaming charges for mobiles.
- Very Good.
- 4 out of 5
- Team work and continues improvement in process and execution.
- Good team work with better management system, figure of the budget with the finance
- We are doing our best to stay ahead of the curve
- In the last 2 years is very bad due we loss customers I don't know what reasons behind this its bad decisions another things
- We are doing good
- RSOT got a good start, but it is becoming more amore resistant to change
- 4 out of 5
- Don't have clear idea
- Customer satisfaction of employee's satisfaction are both indicators of operational performance. We use net promoter score NPS to measure of evaluate both. Meeting annual financials targets of market share growth are indicators of financial performance that lead to shareholders satisfactions.

- I have worked at several organisations but this is one of the best companies to work for
- My organisations is now the biggest IT companies worldwide and we have largest parties across all competitors , our financial performance is excellent
- Very good to excellent
- My company profit growth is getting considerable by higher year after year.
- Excellent
- Apply the highest methodology to make sure the integrity and ethics, and utilize the 30 years of ex price consumer and enterprise
- Excellent
- Yes it is
- I can say I am in a very high position
- The company is very successful in the Saudi market & across the other countries we are #1 market share VS the other competitors
- Better than our expectations
- Excellent
- Although I am not part of operational & financial but numbers & market share are high
- Bigger and better!
- The company is very stable in terms of operations and financial performance.
- Our company loss growth rapidly in the past but has slowed down at the moment due to many factors like eg. regional economic slowdown, change of business strategies etc.
- Financial viability: profitability, customer satisfaction: performance on customer, employee satisfaction: satisfaction survey (performance on employees satisfaction survey)
- Relatively higher that other competitors
- Our company is in financial trouble because of the economy. Bad customer service, products are not available, fresh food are not too fresh stores are not clean
- Team work, encouraging one team, experienced resources, advanced technology and system, matured and standard retail best practices in please, innovative and creative
- Operationally the company is struggling
- My organisation lack operational experience and financial is performing poorly
- It's very poor and needs more development
- Organisation is going well from both perspective